ENVIRONMENTAL ASSESSMENT REPORT University Heights Sites C and E

Prepared for

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1.0 INTRODUCTION: PROGRAM OBJECTIVES

J M Sorge, Inc. (JMS) has been retained by K. Hovnanian Companies of North Jersey, Inc., to perform environmental evaluation and remediation activities at University Heights Development Sites C and E, located in Newark, New Jersey. The objectives of the program are as follows:

- Identify and remove all underground tanks and associated contaminated soil;
- o Conduct soil testing as necessary to determine quality of fill on site;
- Supervise the removal of contaminated soils and conduct post-excavation confirmatory sampling; and,
- Document the testing and cleanup conducted on site.

This report details the findings of the initial phase of these activities, including site investigation and subsurface evaluation, and contains proposed remedial activities regarding areas of contaminated soil and the underground storage tanks not associated with occupied dwellings or businesses at the time of this investigation. As additional properties become accessible, they will be investigated and remedial plans developed accordingly.

1.1 APPROACH

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In August 1989, a limited investigation of portions of this area was conducted. Subsequently, beginning on June 19, 1992 and continuing until July 10, 1992, JMS field personnel investigated the sites through a number of means in order to identify potential areas of environmental concern. The findings of the original investigations have been incorporated into this report. Initially, JMS personnel visually inspected the site to determine the presence of stained soils, refuse, storage tanks or other potential causes of environmental degradation.

The visual inspection was followed by a subsurface evaluation, using electromagnetic remote sensing to identify potential underground storage tanks. This was followed by trenching, test pit installation and soil boring installation to evaluate tank location and condition, and to delineate any areas of contamination.

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2.0 ENVIRONMENTAL SETTING

Sites C and E comprise seven (7) blocks in the University Heights section of the City of Newark. A site location map is provided as Figure 1. Site C consists of city tax blocks 403, 408, and 409; Site E consists of blocks 404, 405, 406, and 407. A site plan is provided as Figure 2. The predominant land use within the surrounding area is residential with less than 10 percent commercial use. The sites were formerly residential tracts, commercial use. The sites were formerly residential tracts, the demolition of most of the existing structures by the City of demolition of most of the existing structures by the City of Newark. The demolition consisted of leveling and filling the condemned portions of the site. Apparently, the residential condemned portions of the site. Apparently, the residential heating oil tanks were not removed from the site prior to demolition. Further, the quality of the fill material used to grade the site was not established at the time of placement.

2.1 REGIONAL GEOLOGY

The site lies within the Piedmont Physiographic Province. The Piedmont Province is underlain by Triassic and Jurassic rocks of the Newark Group. These rocks are classified into four (4) formations: The Stockton Formation, the Lockatong Formation, the Brunswick Formation, and the Watchung Basalts.

The Stockton Formation consists of grey feldspathic sandstone, arkosic conglomerates, and red shale, and is locally up to 2800 feet in thickness. The Lockatong Formation rests conformably on the Stockton and consists of grey and black siltstone. At its type section it is over 3300 feet thick. The Brunswick Formation is the youngest sedimentary member of the Newark Group. This formation is of Triassic to Early Jurassic age, and consists of interbedded brown, reddish-brown and grey shale; sandy shales; of interbedded brown, reddish-brown and grey shale; sandy shales; sandstone; and some conglomerates. The total thickness of the Brunswick Formation exceeds 6000 feet.

The Watchung Basalts are a series of three (3) extensive lava flows of the same age as the Brunswick Formation, and can be found interbedded with it.

2.2 REGIONAL HYDROGEOLOGY

The rocks of the Brunswick Formation are the main source of groundwater in Essex County. Water in these rocks occurs under confined and semi-confined conditions in the lowland areas of Newark where clay beds or till mantle the underlying rocks. Artesian pressure may be considerably reduced, or become unconfined due to the heavy pumping in the Newark area.

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Groundwater exists in unconfined or confined conditions in Pleistiocene glacial deposits above the bedrock. The unconfined groundwater occurs where sand and gravel deposits are not covered by clay, silt or till. These deposits are commonly less than 20 feet thick and do not yield large quantities of water. Confined and semi-confined groundwater occurs where sand and gravel deposits have been covered by clay, silt or till. These aquifers are found in buried bedrock valleys.

The shales and sandstones are generally capable of sustaining moderate to large yields. The best producing wells in the Brunswick Formation are commonly between depths of 300 to 400 feet. Drawdown due to pumping is greatest in the strike direction, (approximately North 30° East) and least in the direction perpendicular to strike. The average yield of large diameter production wells is in the range of 300 to 400 gallons per minute (gpm). Groundwater has been encountered on adjacent sites at depths of 13 to 20 feet. However, the presence of leaking water mains and buried basements has resulted in perched water zones at various intervals.

2.3 SITE SPECIFIC CONDITIONS

Sites C and E were extensively reworked during the process of demolition of the condemned housing and leveling of the area that occurred prior to this investigation. A soil boring program indicated that fill material consisting of building rubble, fill soils, and debris had been used during the post-demolition grading of the sites. Also, examination of the older maps from the City of Newark indicated that the area underwent considerable redevelopment during the period between 1910 and 1925. A review of aerial photos of the area from 1940, 1951, 1961, and 1974 indicates that the site was relatively stable until the period of 1961 thru 1974. Much of the demolition and grading of the site occurred at that time.

The soil boring and trenching investigation results indicate that native soils in the site area have been covered to an average depth of approximately nine (9) feet. The material overlying the native soils is predominantly composed of reworked stony, sandy red soil derived from the Brunswick Formation. This is the material typically found in the block interiors. Bedrock is present at depths ranging from 2 to 15 feet across the site, trending deeper north of West Market Street toward Warren Street. The material that was used to fill the foundations of demolished buildings was composed of soil fill, building rubble and debris.

A great deal of trash has been dumped on the surface of the site over the years. This trash consists mainly of domestic garbage and automobile parts. Nothing of a serious hazardous nature (e.g. drums, industrial waste, etc.) was found on the sites.

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3.0 SITE INVESTIGATION

Preliminary site inspections identified several areas of potential environmental concern on Sites C and E. A number of tanks were located during the preliminary investigation based on a surface inspection of the area. The presence of tank fill ports and vent pipes along the sidewalks were used to identify tank locations. Surface debris was taken as an indication of potential problems associated with the types of material used as fill. Several areas of concern were identified based on a review of aerial photographs and other conditions. The potential areas of concern included the following: surface staining and refuse piles in vacant lots on blocks 408 and 409, and the presence of auto repair shops and garages on blocks 404 and 407. The results of the previous investigation and cleanup completed on adjacent sites provided the basis for assessment of probable subsurface conditions based on the results of this field program. Experience from these previous programs also provided the basis for selection of investigative methods best suited for this area.

The following sections detail the investigative procedures used to evaluate each of these concerns, and the findings of this phase of the investigation.

3.1 BLOCK PERIMETER TRENCHING

In previous work in the adjacent development sites, most of the underground storage tanks (USTs) were located below or adjacent to sidewalks. Aerial photos confirm that much of the seven-block area was occupied by long narrow houses with limited access to the sides and backyards. This type of arrangement made it necessary to locate heating oil tanks in front of the houses to allow access for filling.

The most practical method for locating tanks was exploratory trenching. The trenches were installed using a rubber-tire backhoe along the former block perimeters. Since much of the property was unoccupied, perimeter trenching was almost complete. Figure 2 illustrates the completed trenching program.

3.2 BLOCK INTERIOR SURVEY

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The interior portion of each block was investigated using a three-fold approach. First, an electromagnetic survey was conducted to locate tanks, drums or other large metallic objects in the subsurface. Electromagnetic "hot spots" were then investigated through the use of soil borings, test pits and trenches.

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In addition to the electromagnetic survey, a general site-wide soil boring and test pit grid survey was conducted. Due to obstructions such as buildings, fences and walls, the 50-foot grid survey had to be modified to assure good coverage of the site. Each soil boring and test pit was logged and the characteristics and composition of soils noted.

Cuttings from each boring were field screened using a portable photoionization organic vapor detector and selected samples were kept for laboratory analysis. Soil boring logs and test pit logs are included as Appendix A. The locations of the soil borings and test pits are indicated on Figure 2.

All of the electromagnetic "hot spots" observed in the block interiors were further evaluated during the subsequent drilling and test pit installation program. These were found to be caused by metallic debris such as old pipes, auto parts and metal scrap.

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FINDINGS OF INVESTIGATIVE PHASE: AREAS OF ENVIRONMENTAL CONCERN

On the basis of the investigation described above, a number of areas of environmental concern have been identified at sites C and E. These include the locations of 25 improperly abandoned underground storage tanks and three (3) areas of contaminated soil. Each of these areas is illustrated on Figures 3 through 9 which provide detail maps of each block. The following sections detail the specific findings of the trenching, soil boring, and test pit programs in terms of these areas of concern. Areas of concern have been broken down according to development site and tax block.

UNDERGROUND STORAGE TANKS 4.1

A total of 25 underground storage tanks have been identified as a result of this study. Two (2) of these tanks appear to contain weathered gasoline and water; the remaining tanks all appear to contain varying quantities of water and/or fuel oil. their sizes and to the fact that all of the tanks were associated with residences, none of the tanks are regulated under New Jersey's Bureau of Underground Storage Tanks (BUST) regulations.

4.1. + Site C

BLOCK 403

The tank locations identified on this block are illustrated on Figure 3. The perimeter trenching operation identified three (3) underground storage tanks on Block 403. One tank (T403-1) was not exposed due to its position under the corner of a yard belonging to an occupied residence. The tank does not appear to be connected to said dwelling. It appears that it was left in place during the demolition of a neighboring house, whose lot was then acquired by the owner of the existing dwelling. The existence of the tank was determined when trenching activities outside the fenced area uncovered the feed and return lines and the vent pipe for the tank.

Tank T403-2 is a 550-gallon heating oil tank underneath the sidewalk in front of an abandoned dwelling. Tank T403-3 is a 500-gallon tank, possibly containing gasoline, found at one corner of an empty lot. This tank is believed to have been associated with a former residence at this now vacant lot.

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Tank locations on Block 408 are illustrated on Figure 4. Four (4) USTs have been identified on block 408. Tank T408-1 is a 550-gallon heating oil tank located approximately mid-block along Newark Street. Tank T408-2 is a 1000-gallon kerosene tank located along Newark Street toward Warren Street. Tank T408-3 is a feet from T408-2, in an area of extensive PHC contaminated soils (described below). Tank T408-4 is located under new sidewalk at the corner of Norfolk and Warren Streets. Due to the busy nature of the intersection and the restricted access to the tank area, the amount and type of product, if any, remaining inside. All of these tanks are believed to be associated with former residential structures.

BLOCK 409

Tank locations on Block 409 are illustrated on Figure 5. Three (3) heating oil tanks have been identified on this block. Tank T409-1 is a 1000-gallon UST located near the corner-of Wilsey and Academy Streets. Tank T409-2 is a heating oil tank estimated at 1500 gallons capacity, located in front of an abandoned dwelling on Lot 30 along Newark Street. Tank T409-3 is a 275-gallon heating oil tank that was formerly located in the rear basement of an abandoned house on Lot 19 along Wilsey Street. The house was demolished on or about July 10, 1992, with the tank still in the basement. The tank was subsequently excavated from the rubble and removed from the basement and placed a short distance from the former house, under the supervision of JMS personnel. The tank was observed to be empty of product and in good condition at the time of removal.

4.1.2 Site E

BLOCK 404

Figure 6 illustrates the locations of the tanks identified on Block 404. Six (6) heating oil tanks were identified on this block. Four (4) are located in the basements of abandoned houses. Of these four, two (T404-2 and T404-3) have been determined to be 275-gallon oval tanks. Both of these were found along Academy Street. Due to the uncertain structural integrity of the dwellings in which they are located, and the lack of direct access from outside the dwellings, the other two (2) basement tanks (T404-5 and T404-6) were not directly investigated. However, it is reasonable to assume that they are also 275-gallon tanks similar to the others. Once the dwellings have been demolished these two (2) tanks will be addressed in detail.

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The two (2) remaining tanks were uncovered during trenching operations along Academy Street and School Street. Tank T404-1 is a 550-gallon tank located beneath the sidewalk in front of an abandoned house along Academy Street. 1000-gallon tank in front of an empty lot across from the elementary school. Both tanks contain heating oil.

In addition, the garage of an abandoned house along Academy Street (Lot 20) appears to be an area of concern. A sign indicates that the garage used to be an auto repair shop. There is a great deal of refuse in the garage, and the floor appears to be heavily stained with motor oil. Due to restricted access, further investigation of this area will have to be delayed until the structure is demolished and the debris removed.

BLOCK 405

Tank locations identified on Block 405 are illustrated on Figure 7. Five (5) USTs have been identified around the perimeter of this block. One, Tank T405-1, lies beneath the pavement in front of the recently demolished brick church along West Market Street. The tank is estimated to be of 1500 gallons capacity, and contains a small amount of No. 2 heating oil and water.

Due to the presence of underground utilities, including power lines and fiber-optic phone lines, the tank was not exposed.

The remaining tanks, T405-2 through T405-5, were exposed by trenching activities along Academy Street. Tanks T405-2 and T405-3 are both 550-gallon heating oil tanks. Tank T405-3 appears to have leaked at some time in the past, but based on the trenching activities it appears that a limited area has been affected, and the volume of soils that will require removal is limited.

Tank T405-4 is a 1000-gallon heating oil tank. Stained soils near the fill port indicate that some spillage has occurred, but again the area affected appears to be limited.

Tank T405-5 is an odd-sized tank, estimated at 850 gallons capac-There is no evidence of leakage around this tank, which contains heating oil.

BLOCK 406

Tank locations on Block 406 are illustrated on Figure 8. Four (4) underground heating oil tanks have been identified along the perimeter of Block 406. Three (3) tanks, T406-1 through T406-3, were located along West Market Street in the immediate vicinity of buried utility lines, as described above. For this reason the tanks were not uncovered.

Tank 406-4 is a 550-gallon heating oil tank which was uncovered by trenching activities along Newark Street.

Figure 9 illustrates the locations of tanks on Block 407. No underground heating oil tanks were encountered during trenching activities along Block 407. Two (2) tanks have been visually identified, but both are attached to occupied dwellings.

4.2 CONTAMINATED SOIL AREAS

Seven (7) areas of contaminated soil apparently not associated with underground storage tanks were also identified as a result of this investigation. One additional area of suspect soil was identified on the basis of field conditions but sample analysis did not confirm significant levels of contamination. The results of the investigation conducted on each block are discussed in the following sections.

Soil samples were submitted for analysis on the basis of observed field conditions. Samples were analyzed for various combinations of parameters, including petroleum hydrocarbons (PHC), volatile organic compounds with a forward library search (VO+), base neutral extractable organic compounds with a forward library search (BN+), acid extractable organic compounds (AE), priority pollutant metals (PPM), polychlorinated biphenyls (PCBs), pesticides, cyanide and phenols. Analytical results were compared with the most stringent of NJDEPE's proposed cleanup standards for residential sites, in accordance with recent directions and recommended practices issued by the NJDEPE. Table 1 provides a summary of the proposed standards for all of the compounds identified in this investigation. Areas of contaminated soil for which remedial actions are necessary were defined on the basis of the proposed standards.

4.2.1 Site C

BLOCK 403

A total of fourteen (14) samples were collected on Block 403 (Figure 3). The samples were concentrated in the area of a vacant lot along Wilsey Street, where visual observation indicated that the area had been used for auto repairs and garbage disposal. Several test pits and trenches were installed in order to determine the subsurface impact of widespread surficial staining apparently caused by motor oil, transmission fluid, and brake fluid. Visual inspection of the trench profiles indicated that the surface staining did not penetrate to a significant depth, and the trench samples have confirmed a clean subsurface environment. At sample location 403-6 low levels of a number of BN compounds were identified at concentrations slightly exceeding the applicable standards. However, only relatively limited surficial soil removal will be necessary in most of this area.

One sample, 403-7, was collected from suspect fill material found in a relict basement adjacent to an existing structure. This sample yielded a lead concentration of 428 parts per million

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(ppm) and a trace of the BN compound chrysene, both of which are in excess of the applicable standards. This material will be excavated and removed for proper disposal. Details of the proposed remedial actions are discussed in Section 5.0.

The remaining accessible portions of Block 403 appeared not to have been subject to adverse environmental conditions. Trenches and test pits uncovered mixed fill and soil to a depth of approximately six (6) feet in some locations, but encountered no fur-ther evidence of contamination. Table 2 provides a summary of the analytical results for samples from this block. Laboratory data are provided in Appendix B.

BLOCK 408

Twenty-seven (27) samples were collected on Block 408. total, twenty-two (22) were obtained from test borings, with the remaining five (5) being collected from exploratory trenches. Sample locations are depicted on Figure 4.

Several areas of concern had been previously identified on Block 408. These comprise an area of stained soil along Newark Street which extends toward a large brick building fronting on Norfolk Street, and an area of stockpiled soil near the corner of Newark and Warren Streets. Samples 408-2 through 4A, 6, 7 and 408-11 through 15 were collected from the area of the stained soil, which is reputed to be the result of illegal dumping of heating oil.

Analytical results for these samples are summarized on Table 3. The results have identified PHC, numerous BN compounds, and lead at concentrations exceeding the applicable standards. observations and analytical results indicate that contamination in this area extends to depths of between 6 and 9 feet. total volume of contaminated soil in this area is estimated at 1950 cubic yards or 2600 tons. This material will be excavated and removed for proper disposal. Details of the proposed remediate al actions are outlined in Section 5.0.

The area of stockpiled soils is immediately adjacent to the stained soils location discussed above. Three (3) samples were collected from the stockpile area. Two (2) samples, 408-20 and 408-21, were taken from test borings at a depth of 10.5 to 11.0 feet, and analyzed for PHC. The third sample, 408-PS, was taken from the top surface of the stockpile, and analyzed for Priority Pollutants Plus 40 (PP+40). Samples 408-20 and 408-21 yielded non-detect readings, but sample 408-PS indicated the presence of BN compounds and lead at concentrations in excess of the applicable standards. JMS proposes to conduct additional sampling, including waste classification sampling of the stockpile in order to determine if any of the stockpile can remain on site. Please refer to Appendix C for a description of waste classification sampling procedures and frequency.

of the remaining samples collected of Block 408, 408-16 yielded results in excess of applicable standards for PHC and benzo(b) fluoranthene. This sample was obtained adjacent to a back yard near a garage. It is likely that the contamination encountered in this sample is the result of a very localized oil spill related to auto repair, since the rest of the area appears not to have been affected. JMS proposes to remove a limited amount soil in the area of this sample, to be followed by post-excavation confirmatory sampling.

Sample 408-19 contained a number of BN compounds in excess of applicable standards. Again, contamination in this area appears to be relatively limited in extent. This soil will be removed for proper disposal. Please refer to Table 3 and Appendix B for sample results summaries.

BLOCK 409

Seven (7) samples were collected from Block 409 (Figure 5). Six (6) borings were installed on vacant areas of the block surrounding the church located on the corner of Warren and Wilsey Samples 409-1 through 409-6 were collected from the Streets. 10.5 to 11.0 foot depth range, and analyzed for PHC. tory report indicates that no PHC compounds were detected above the analytical Method Detection Limit. One sample, 409-8, was collected from a trench installed along the wall of a garage fronting on Wilsey Street. The garage is currently being used by the City of Newark to store construction equipment and other The sample was collected from the 3.5 to 4.0 foot depth interval, and analyzed for PHC and VO+15. While trace amounts of each parameter were detected, the results were far below the applicable standards. Refer to Table 4 and Appendix B for sample results summaries.

Despite the presence of extensive construction debris on the vacant portion of the block covered by samples 409-1 through 409-6, the exploratory program did not encounter any chemical contamination associated with the physical debris.

Based on the results of the soil sampling program conducted on this block, no additional soil removal is deemed necessary beyond that involved with the tank removal program.

4.2.2 <u>Site E</u>

BLOCK 404

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Six (6) samples from this block were submitted for analysis during the 1989 sampling episode. One additional sample was collected as part of the most recent phase of investigation. The sample locations are indicated on Figure 6.

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Samples B404-1 through 4 were collected during the 1989 investigation. The samples identified low levels of PHC, VO compounds and the pesticides dieldrin, DDT and helptachlor, all at concentrations well below the applicable standards. a number of BN compounds and the metals cadmium and lead were identified at concentrations exceeding the standards. The affected area is believed to be relatively restricted in extent. This material will be excavated and removed for proper disposal.

During the recent phase of investigation, Sample S404-2 was taken adjacent to tank T404-1 at a depth of 2.0 to 2.5 feet, and analyzed for PHC. Petroleum hydrocarbons were detected at 315 ppm, well below the standard of 10,000 ppm. Sample results are summa-Laboratory analytical reports are provided in rized on Table 5. Appendix B.

Additional sampling will be conducted as part of the tank removal program. Sample results may indicate that additional soil removal is warranted. Also, the former auto repair snop along Academy Street requires further investigation which has not been possible to date due to obstruction of the area by the remains of the former structure and construction debris. JMS proposes exploratory excavation of the former auto shop location. Investigative samples may be collected if field conditions warrant. Based on the results of any samples from this investigation, additional soil removal may be necessary.

BLOCK 405

One sample was collected from this block during the 1989 investigation. Four (4) additional samples were collected during the most recent phase of investigations. through 405-4, were obtained from the exploratory trenches installed along the block perimeter. The original sample designated B405-1 was collected from the portion of the site now occupied by the construction yard. Please refer to Figure 5 for sample locations. The recent samples were analyzed for PHC, with one sample (405-4) also being analyzed for BN+15. The original sample was analyzed for priority pollutants plus 40 (PP+40). None of these samples identified any contaminants at concentrations meeting or exceeding applicable standards. Sample results are summarized on Table 6, laboratory analytical reports are included in Appendix B.

Based on these results, we do not anticipate any soil removal in addition to that associated with the tanks identified on this block.

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BLOCK 406

Fourteen (14) samples were collected on Block 406. Eleven (11) were obtained from test borings at varying depths, and three (3) were obtained from exploratory trenches along the block perimeter (Figure 8). Sample results are summarized on Table 7. Laboratory analytical reports are provided in Appendix B. All the samples were analyzed for PHC, with samples B406-6 and B406-9 also being analyzed for Priority Pollutant Metals. Scattered low plicable standards.

Sample B404-6 contained 209 ppm lead, which exceeds the applicable standard. The concentration is relatively low and is believed to represent a relatively restricted occurrence. The B406-6 area will be excavated to remove the affected soil. Details of the proposed remedial action are discussed in Section 5.0.

BLOCK 407

A total of eight (8) samples were submitted for analysis from Block 407. Sample locations are depicted in Figure 7. All the samples were analyzed for PHC, with the exception of samples 407-1 and 407-2, which were analyzed for PP+40. The Priority Pollutant analysis was specified for these two (2) samples due to the presence of an odor suggesting pesticides which was encountered while installing a trench along Academy Street. However, neither sample indicates the presence of any pesticides in this area. In fact, no contaminants were identified at concentrations meeting or exceeding the applicable standards in any of the samples collected on this block. Sample data are summarized on Table 8, laboratory analytical reports are included in Appendix B. Based on these results, no remedial activities are proposed for this area at this time.

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5.0 DISCUSSION AND RECOMMENDATIONS

As a result of this investigation, 25 improperly abandoned underground storage tanks were identified. In addition, seven (7) areas of contaminated soil unrelated to underground storage tanks have also been identified. None of the tanks are subject to NJDEPES underground storage tank regulations. However, their presence represents a liability to the site and they may have been, and continue to be, sources of contamination. Therefore, all tanks will either be removed or properly abandoned in place as appropriate.

The seven (7) areas of contaminated soil are contaminated with various combinations of PHC, BN compounds, lead and in one case, cadmium. Generally, the concentrations of contaminants are not extremely high. However, in each case residential soil cleanup standards have been exceeded and therefore, some remedial action is necessary. It is significant to note that in none of these areas do hazardous waste conditions exist.

Tank removal and abandonment will be conducted as follows: First, the tank in question will be uncovered or otherwise made accessible by Milltown Drilling and Excavation (MDE). product removal, tank entry, and cleaning will be performed by representatives of L&L Oil Service, Inc. employees will create additional openings in the tank so that it may be completely emptied. The tanks will then be entered and cleaned. Most of the tanks in question are #2 heating oil tanks, and the necessary health and safety precautions are minimal. (2) tanks, however, appear to contain gasoline, and additional precautions may be necessary. In these cases, both JMS and MDE will be present with the necessary equipment and materials to secure the tank area in order to assure safe working conditions. Once the tanks have been emptied and cleaned, they will be loaded onto a dump truck and transported to a scrap dealer for disposal. All tank removal and subsurface evaluation work will be performed by personnel certified by NJDEPE Bureau of Underground Storage Tanks.

Following the removal of each tank, contaminated soil will be excavated and removed, if necessary. All contaminated soil will be stockpiled on, and covered with, 6-mil polyethylene sheeting at a designated location on site. Following the removal of any contaminated soil, a minimum of four (4) post-excavation confirmatory samples will be collected from the base of the sidewalls of the excavation. If extensive soil removal is necessary at any location, additional post-excavation confirmatory samples will be collected. In order to maintain site safety, all excavations will be closed immediately following the collection of post-will be closed immediately following the collection of post-excavation samples. Excavations will be backfilled with existing site materials. All post-excavation samples will be analyzed for PHC. If the PHC concentration of any sample exceeds 500 ppm, the sample will also be analyzed for VO+ and BN+. Stockpiled waste soil will be analyzed for waste characterization purposes and arrangements will be made for its proper off-site disposal.

At this time it is impossible to predict the ultimate volume of soil that will have to be removed as a result of contamination caused by the tanks. However, for purposes of estimation, we have used past experience in the area to arrive at an estimate of approximately 1000 tons for the total contaminated soil associated with the 25 tanks.

Due to the access problem, JMS proposes to abandon four (4) of the tanks in place. The tanks to be abandoned in place are: T405-1, T406-1, T406-2 and T406-3. These tanks are located along West Market Street in the immediate vicinity of buried power and fiber-optic lines. In order to reduce the risk of property damage or injury to site personnel, these tanks will be left in place. After the tanks have been emptied and cleaned, they will be filled with concrete and the excavation will be backfilled. If contaminated soils are encountered in the tank area, as much soil as possible will be removed without jeopardizing the integrity of the underground utility lines. One additional tank (T408-4) is located at the corner of Warren and Norfolk Streets. The tank is located under new sidewalk in close proximity to a busy intersection, with limited access to the tank location. presence of underground utilities is suspected, and it would be prudent to minimize the disturbance of the area. Therefore, this tank may also be abandoned in place.

Each of the seven (7) areas of contaminated soil will be excavated and removed. In each location, post-excavation confirmatory soil samples will be collected to verify the complete removal of contaminants to the applicable cleanup standards. The following table summarizes each of these areas:

AREA	TOTAL TONNAGE	NO. POST-EX. SAMPLE	POST-EX. SAMPLE PARAMETERS
408-2	. 2600	12	PHC, BN+, Pb
408-16	135	5	PHC, BN+
408-19	120	5	BN+
403-6&7	645	11	BN+, Pb
404-2	65	5	BN+, Cd. Pb
406-6	160	6	Pb

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Following the receipt of analytical results confirming the removal of contaminants to acceptable levels, all excavations will be backfilled using existing site materials. Following the backfilling of the excavations, a final report documenting the comfilling of the excavations, a final report documenting the completion of all remedial activities and the final environmental condition of the site will be prepared. The report will include the following:

- o Description of all remedial activities;
- o Tabular summaries of post-excavation sample results;
- o Laboratory analytical reports;
- All appropriate quality assurance/quality control documentation; and
- o A summary of the post-remedial environmental quality of the site.

KH0V005878

6.0 ESTIMATED REMEDIAL COSTS

1. TANK REMOVAL/ABANDONMENT

REMOVAL	
Backhoe/Operator, 5 days @ \$600/day \$ Dump truck/Operator, 5 days @ \$450/day Vac. truck/Operator, 5 days @ \$1000/day Waste product disposal, 7000 gal @1.00/gal Sampling/Supervision, 5 days @ \$500/day	3,000 2,250 5,000 7,000 2,500

TANK ABANDONMENT

Delivery of 20 yds. cement

1,200

SAMPLE ANALYSIS

100-150 PHC 25-40 BN+ @ 25-40 VO+ @	\$400	7,500 10,000 8,125	-	16,000
		-,225		13,000

SUBTOTAL

\$44,375-64,000

2. CONTAMINATED SOIL EXCAVATION+STOCKPILING

EXCAVATION/SAMPLING

Excavator/Operator-5 days @\$1000	\$	5,000
Backhoe/Operator-5 days @\$600	Y	
2 Dump trucks/Operator-5 days @\$450/ea.		3,000
Dozer/Operator 2 days @\$450/ea.		4,500
Dozer/Operator-3 days @\$750		2,250
Sampling/Supervision-5 days @\$800		4,000
Equipment/Supplies-5 days @\$200		1,000
Sample Analysis		1,000
17 PHC @\$70		
38 BN+ @\$400		1,190
		15,200
34 Pb @\$40		1,360
5 Cd @\$40		200
5 Waste Characterization @\$1400		
		7.000

BACKFILLING

SUBTOTAL	\$ 48,300
Backhoe/Operator-2 days @\$600 Dump truck/Operator-2 days w@\$450 Dozer/Operator-2 days @\$750	\$ 1,200 900 1,500

KH0V005879

3. WASTE SOIL DISPOSAL *
Tanks - 1,000 tons

Contaminated Soil Areas - 3725 tons 4725 tons @\$40-75/ton **

189,000 - 354,375

* We assume the K. Hovnanian will choose to contract directly with a disposal firm for disposal of this material

** low cost scenario assumes material can be used as landfill cover locally

4. PROFESSIONAL SERVICES

21.

Project Management Data Analysis Report Preparation \$ 6,000 6,000 8,000

SUBTOTAL

20,000

ESTIMATED PROJECT TOTAL \$301,675 - 486,675

KH0V005880

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Throughout this investigation, strict measures were taken to assure the validity of all analytical data and the investigation findings. All samples were collected in accordance with JMS standard sampling procedures which have been approved by NJDEPE for numerous similar investigations. These procedures are outlined in Appendix C.

All analyses were performed by Envirotech Research, Inc. of Edison, New Jersey (NJDEPE certified laboratory No. 12543). A summary of analytical methodologies is provided in Appendix C. Complete laboratory quality assurance/quality control (QA/QC) documentation will be kept on file for review as necessary.

KH0V005881

8.0 CONCLUSION

...

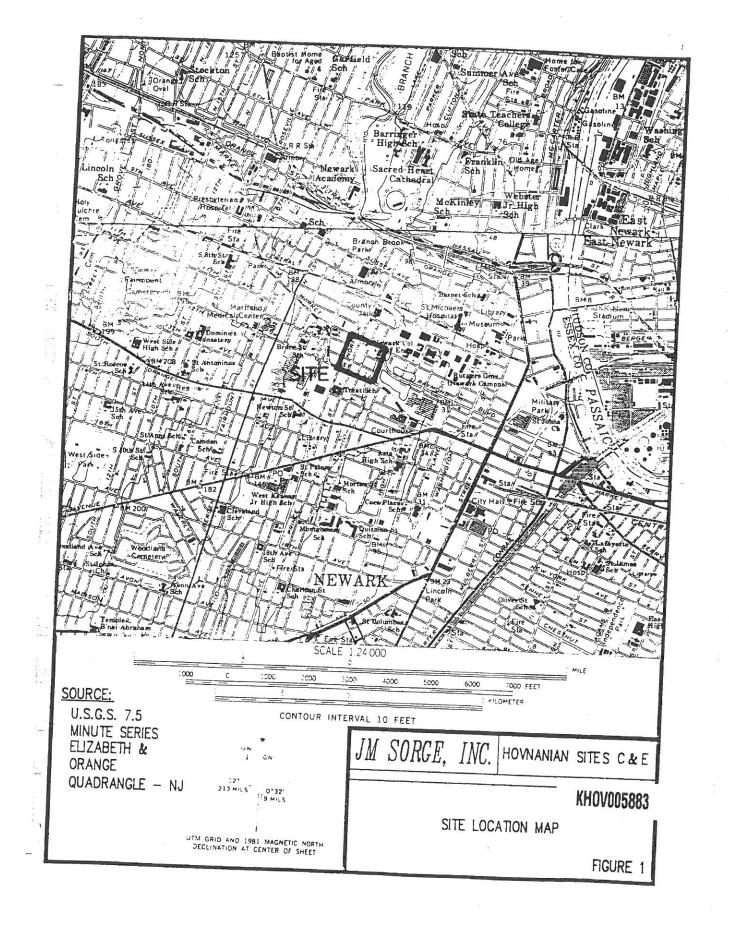
150

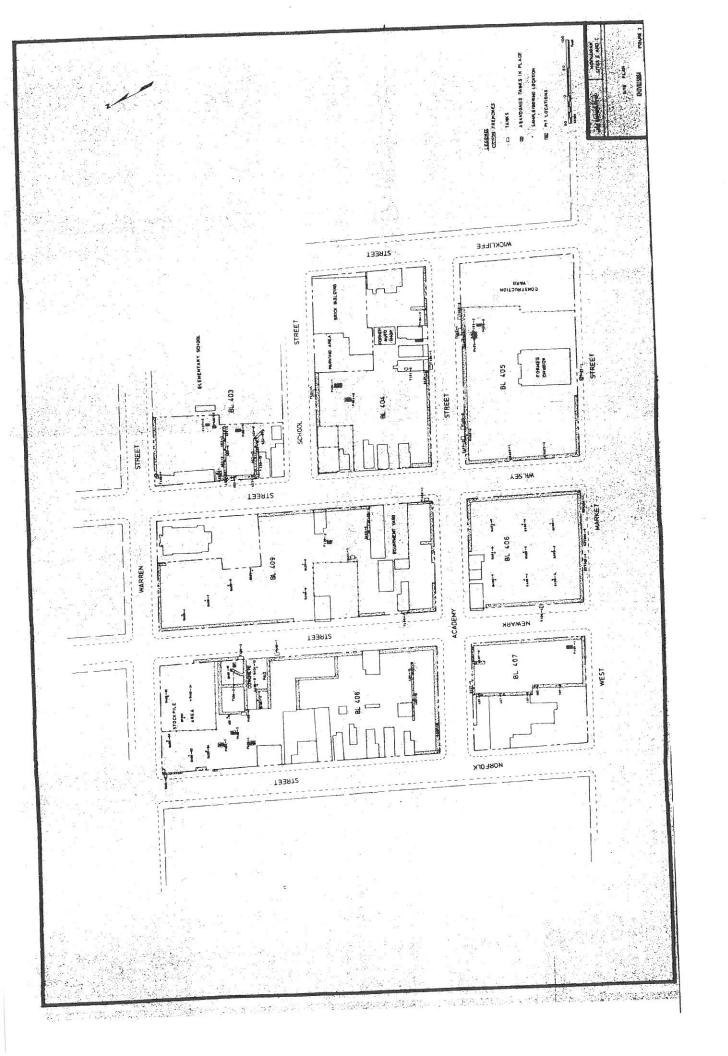
As a result of this investigation, a number of areas of environmental concern have been identified on this site. The areas of concern include improperly abandoned underground storage tanks, as well as areas of contaminated soil not associated with tanks. No hazardous waste conditions have been identified. However, the tanks and the contaminated soil areas represent environmental liabilities which must be addressed.

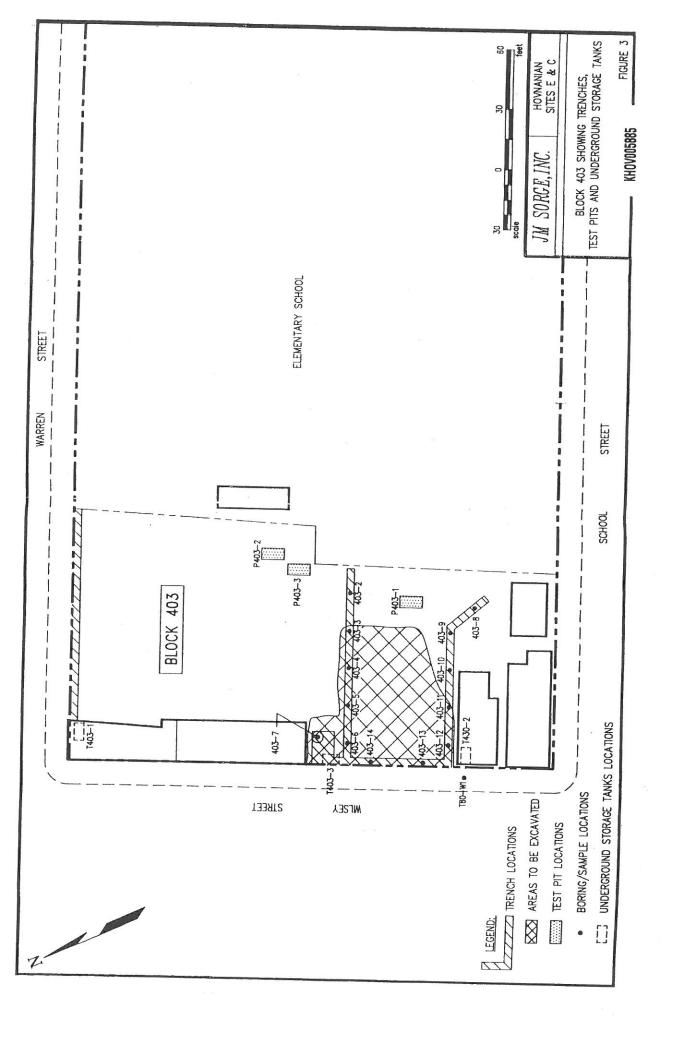
Based on the findings of this investigation, a remedial action plan has been developed. The plan calls for the removal and/or proper abandonment-in-place of all of the tanks and the excavation of any contaminated soil associated with them. The Plan also provides for the removal of the contaminated soil areas which are not related to the tanks. All soil removal activities will be followed by the collection and analysis of post-excavation samples to confirm the complete removal of contaminants to appropriate cleanup standards.

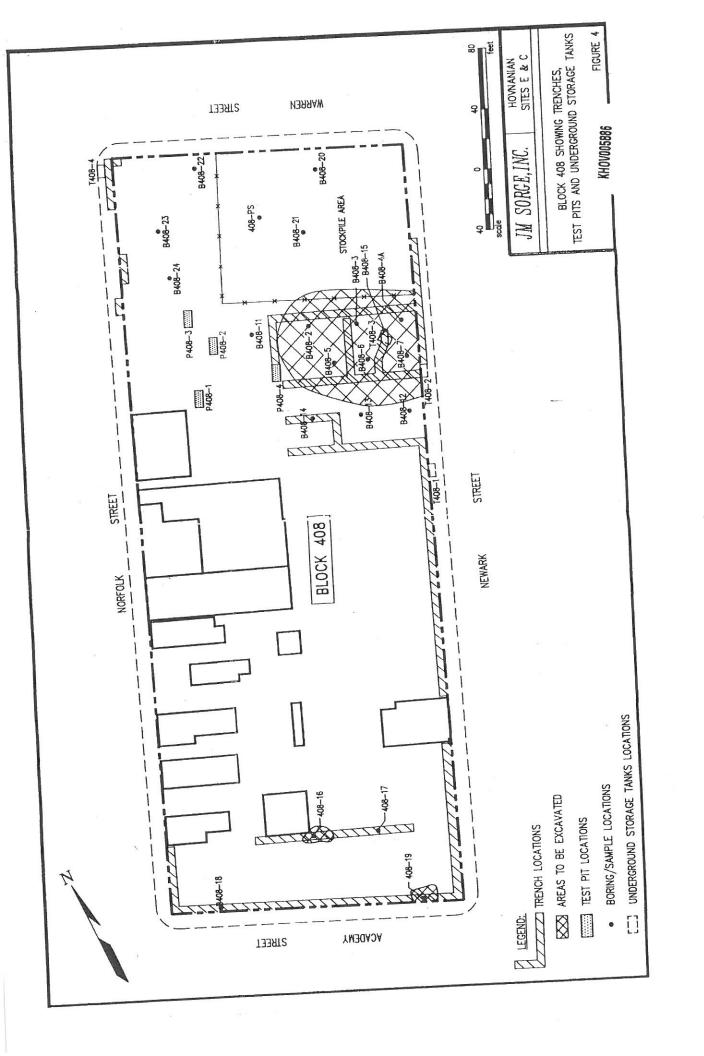
The goal of the proposed remedial action is to remove all soils containing contaminants at concentrations meeting or exceeding the most stringent NJDEPE proposed cleanup standards for residential sites. Implementation of the remedial action will bring all known areas of contamination into compliance with the applicable standards and render the site acceptable for residential development.

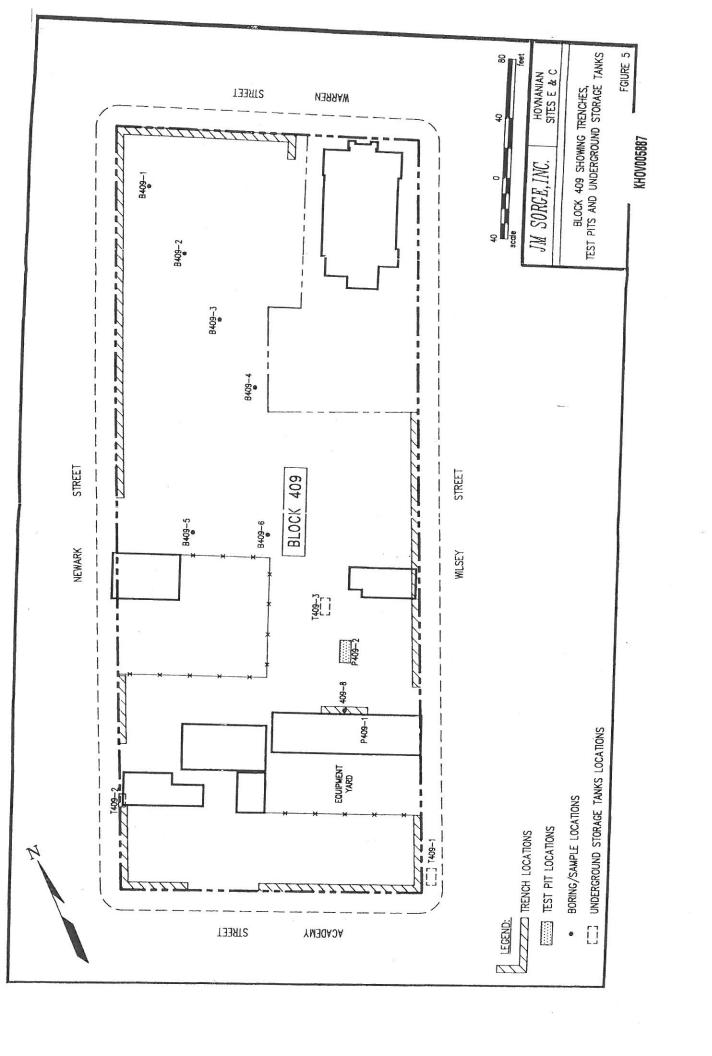
KH0V005882

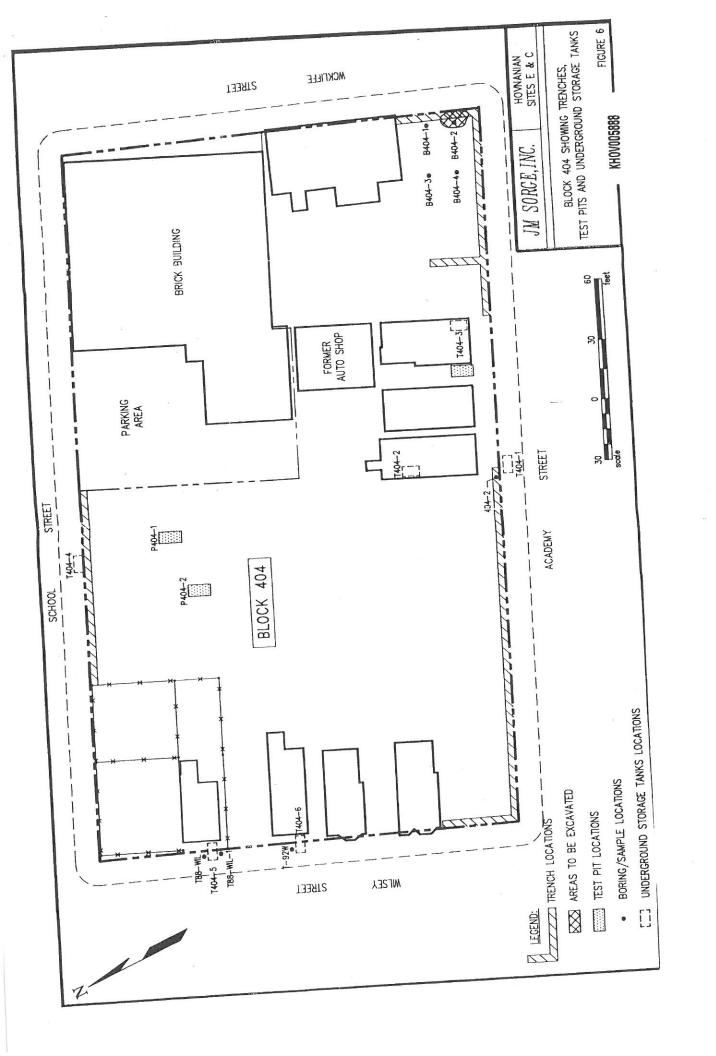


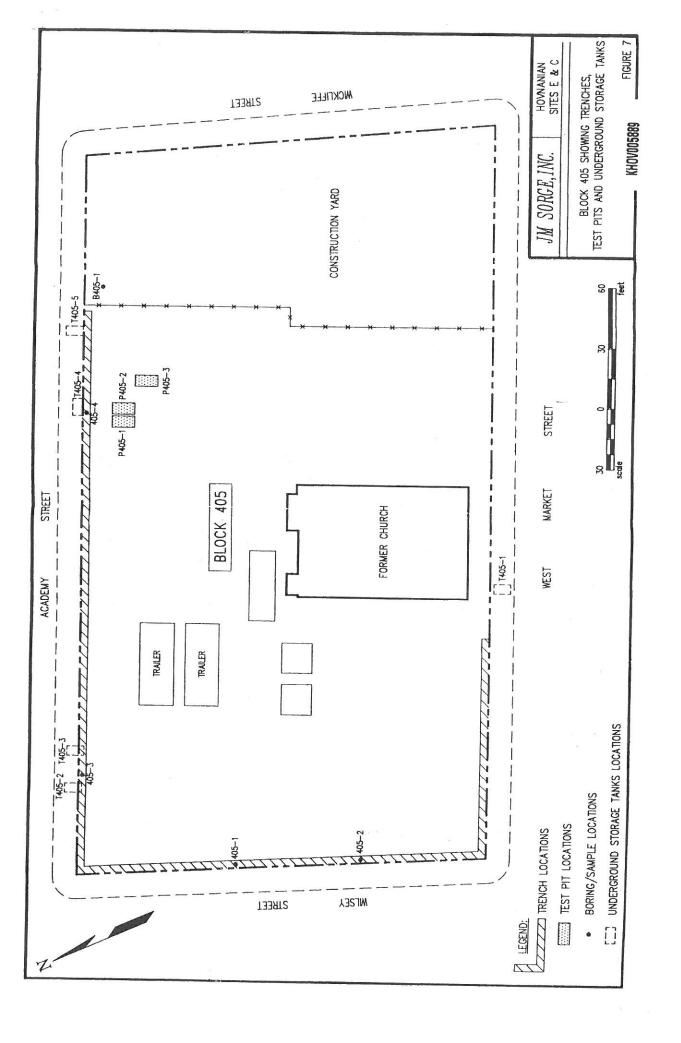


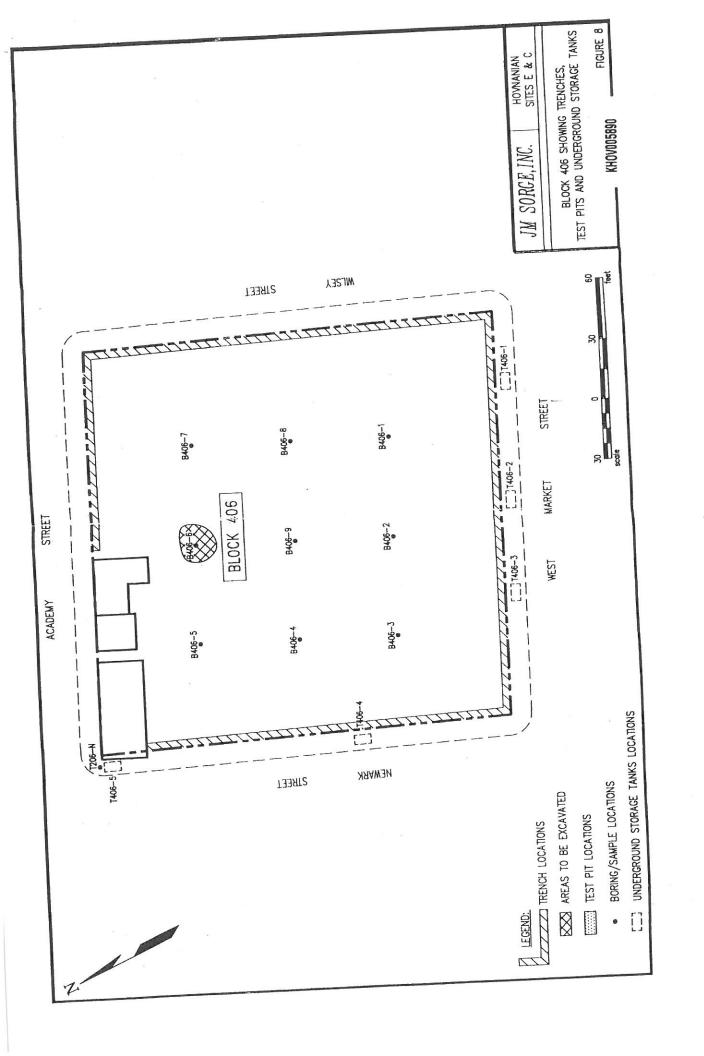












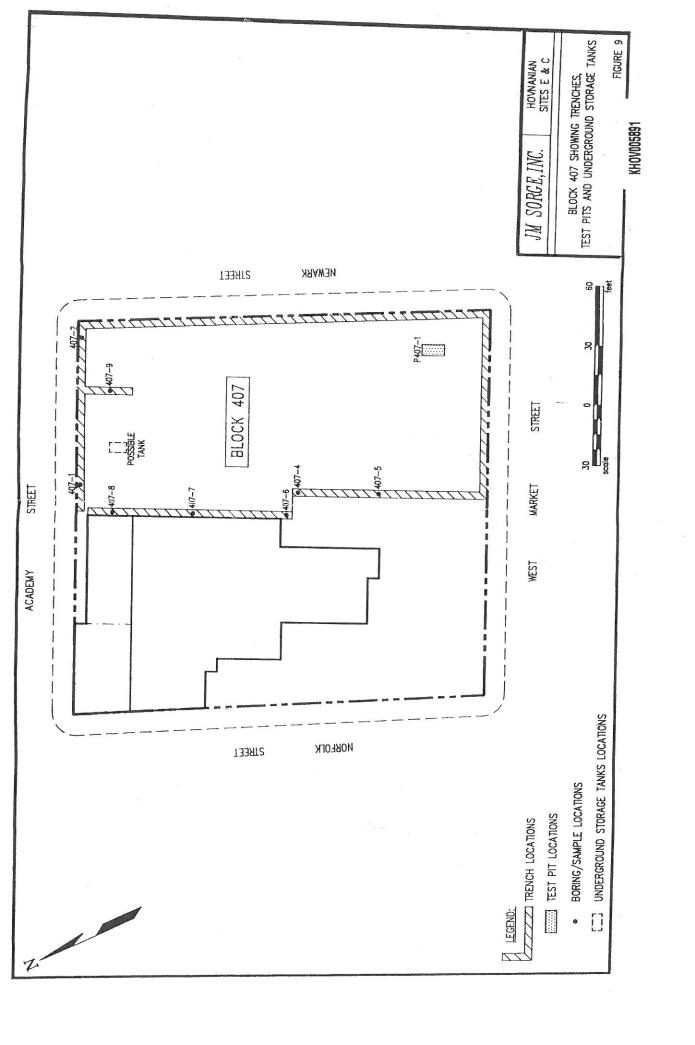


TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

	ACTION LEVEL
COMPOUND	3
VOLATILE ORGANICS	50
ACETONE	AN
ACROLEIN	1
ACRYLONITRILE	1
BENZENE	1
BROMOFORM	NA
BROMODICHLOROMETHANE	1
BROMOMETHANE	50
2-BUTANONE	1
CARBON TETRACHLORIDE	1
CHIOPOBENZENE	NA
2-CHLOROETHYLVINYL ETHER	1
CHLOROFORM	10
CHLOROMETHANE	1
DIBROMOCHLOROMETHANE	NA
1.2-DICHLOROBENZENE	1
DICHLOROBROMOMETHANE	1
1,1-DICHLOROETHANE	1
1.2-DICHLOROETHANE	NA
DICHLOROETHYL ETHER	10
1,1-DICHLOROETHYLENE	50
1,2-DICHLOROETHYLENE	NA
1,2-DICHLOROPROPANE	1
1,3-DICHLOROPROPENE	100
ETHYLBENZENE	50
4-METHYL-2-PENTANONE	10
METHYLENE CHLORIDE	23
STYRENE	1
1,1,1,2-TETRACHLOROETHANE	1
1,1,2,2-TETRACHLOROETHANE	1
TETRACHLOROETHYLENE	500.000
TOLUENE	

KH0V005892

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
1,1,1-TRICHLOROETHANE	50.000
1,1,2-TRICHLOROETHANE	1
TRICHLOROETHYLENE	1.000
TRICHLOROFLUOROMETHANE	NA
VINYL CHLORIDE	1
XYLENES (TOTAL)	10
BASE NEUTRALS	
CaPAH COMPOUNDS	
BENZO(A) ANTHRACENE	0.66
BENZO(A) PYRENE	0.66
BENZO(B) FLUORANTHENE	0.66
BENZO(K) FLUORANTHENE	0.66
CHRYSENE	0.66
DIBENZO(A, H) ANTHRACENE	0.66
INDENO(1,2,3-C,D)PYRENE	0.66
NON-CaPAH COMPOUNDS	
ACENAPHTHENE	100
ANTHRACENE	500
BENZIDENE	NA
BENZO(GHI) PERYLENE	0.66
BIS(2-CHLOROETHYL) ETHER	1
BIS(2-CHLOROISOPROPYL) ETHER	10
BIS(2-ETHYLHEXYL) PHTHALATE	49
BUTYL BENZYL PHTHALATE	100
DI-N-BUTYL PHTHALATE	100
DI-N-OCTYL PHTHALATE	100
1,2-DICHLOROBENZENE	50
1,3-DICHLOROBENZENE	100
1,4-DICHLOROBENZENE	100
3,3'-DICHLOROBENZIDENE	2

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

	ACTION LEVEL
COMPOUND	
2.77	50
DIETHYL PHTHALATE	50
DIMETHYL PHTHALATE	1
2,4-DINITROTOLUENE	NA
2,6-DINITROTOLUENE	500
FLUORANTHENE	100
FLUORENE	50
HEXACHLOROBUTADIENE	0.42
HEXACHLOROBENZENE	100
HEXACHLOROCYCLOPENTADIENE	100
HEXACHLOROETHANE	10
ISOPHORONE	NA
MIREX	100
NAPHTHALENE	100
N-NITROSODIPHENYLAMINE	NA
N-NITROSODIMETHYLAMINE	0.66
N-NITROSODI-N-PROPYLAMINE	1
NITROBENZENE	NA
PHENANTHRENE	500
PYRENE	100
1,2,4-TRICHLOROBENZENE	
ACID EXTRACTABLE COMPOUNDS	
2-CHOROPHENOL	50
4-CHLORO-3-METHYL PHENOL	100
2,4-DICHLOROPHENOL	10
2,4-DICHEONE 2,4-DINITROPHENOL	10
	NA
DINOSEB PENTACHLOROPHENOL	100
PHENOL	50
2,4,5-TRICHLOROPHENOL	50
2,4,6-TRICHLOROPHENOL	50

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
PRIORITY METALS	
ANTIMONY	
ARSENIC	14
BARIUM	20
BERYLLIUM	600
	2.
CADMIUM	1
CHROMIUM	NA
COPPER	600
LEAD	1.00
MERCURY	14
NICKEL	250
SELENIUM	1
SILVER	40
THALLIUM	2
VANADIUM	380
ZINC	1500
PETROLEUM HYDROCARBONS	10000
POLYCHLORINATED BIPHENYLS	0.45
PESTICIDES	
ALDRIN	0.04
CARBOFURAN	NA
CHLORDANE	NA
DEMETRON	NA
DIELDRIN	0.042
4,4'-DDE	2
4,4'-DDT	2
4,4'-DDD	3
ENDOSULFAN	3
alpha-ENDOSULFAN	NA

HOVNANIAN

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

	ACTION LEVEL
COMPOUND	
	NA
beta-ENDOSULFAN	NA
ENDOSULFAN SULFATE	17
ENDRIN	0.15
HEPTACHLOR	NA
HEPTACHLOR EPOXIDE	0.52
LINDANE	NA
MALATHION	280
METHOXYCHLOR	0.62
TOXAPHENE	
HERBICIDES	NA
ATRAZINE	NA
2,2-DICHLOROPROPIONIC ACID	NA
2,4-D	NA
DIQUAT	NA
ENDOTHALL	NA
2,4,5-TP	NA
TCDD	NA :
OTHER	NA
ACRYLAMIDE	NA
ALACHLOR	NA
ASBESTOS	50
BENZYL ALCOHOL	NA
alpha-BHC	NA
beta-BHC	NA
gamma-BHC	NA
CHLOROPYRIFOS	280
CYANIDE	NA
DI-N-PROPYLNITROSAMINE	NA NA
1,2-DIPHENYLHYDRAZINE	NA
EPICHLOROHYDRIN	IAU

HOVNANIAN

TABLE 1

NJDEPE PROPOSED SOIL CLEANUP STANDARDS FOR RESIDENTIAL SITES

COMPOUND	ACTION LEVEL
ETHYTHLENE DIBROMIDE	NA
FLUORIDE	1100
HYDROGEN SULFIDE	NA
MIREX	NA
OXAMYL	NA

NOTES: NA - no new standard available

SAMPLE RESULTS SUMMARY SITE C - BLOCK 403 HOVNANIAN TABLE 2

T-104 (43-1)										6-01	-
					403-3	403-4	403-5	403-6		alock 403	
STATE STAT		T-80W1	403-1	403-2	107	Block 403	Block 403	Block 603			_
CHE	unple No.	Block 403	Block 403	Block 603	Block 403	3.0-3.5	3.0-3.5	3.0-3.5	.; ;	1.5-2.0	
COLOR COLO	rea of Concern	0 4-6 0	3.0-3.5	3.0-3.5	3.0-3.3	07/01/92	07/07/92	07/01/92	6	1	1
NATION NA	usple Depth	08/16/89	07/06/92	01/01/92	07/01/36	MA	NA				E
### NA	ate sampled	411	N.A.	#A	Y N			o	pa .		;
HA NA	OLATILE ORGANICE (ppb)	C E						210		0,1	
100 100	METHYLENE CHLORIDE									:	
HAN NA N	1,1,1-TRICHLOROETBANE							22		0 Z	
NA								2			
NA	TOTAL TARGET						42				
NA N				NA	NA	4 2	i				
NO	PASE NEUTRALS (ppb)	42						750	'n	110	י מ
NO	COMPOUNDS		C Z					780	h	084	ר
THENE ND ND ND ND ND ND ND ND ND	THENEN AND AND THE NE		2 2					069	n	260	רי
THE NEED TO THE NE	THE TOORANTHENE		1					970	7	0 9 8	א
NO PYTEME NO NO NO NO NO NO NO N	THE STATE OF THE PARTIE OF THE		2 1					O.X.		160	h
NE NE NE NE NE NE NE NE	to Describe							0.5%	'n	370	,
NOS	CENTSENE FIRST HI ANTERACENE		2 1								
NE NE NE NE NE NE NE NE	ZHZHĀd(O J-)		Z								
ND	INDENO							NO		140	מ
PRTEALAIT	SOMPOUNDS		QN.					620	n	450	י מ
12 PUTWALATE 130 3 15 15 15 15 15 15 15	BNTERACENE		2					MD		310	י פ
(Ppm) NA	BENEO(GHI) PERYLENE		QM					1200		1 2 0 0	, ,
1300 3 360 0 0 360 0 0 360 0 0 3122000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 3220000 32	BIS(2-ETHILHEXYL) PHIBALAIE		320	'n				670		099	
122000 6960 WA	PLUORANTHENE		1300	n				1100	מ	1300	
COMPOUNDS (PPP) MA MA MA WA BA WA CAMBONS (PPM) ND 6940 ND MD MD MA MA WA	PHENANTHRENE		366	ь						000	
(PPm) NA	PYRLNE							QA.			
COMPOUNDS (PPP) MA			122000					OM		0000	
HA HA HA HA BA BA HA	IDENTIFIED PEAKS		65600							Q.	1
NA MA WA MA WA	UNKNOWN PEAKS			40	42	KN NA	NA.	₹z			
ND S940 WD B4D WD	ACID EXTRACTABLE COMPOUNDS (PPD)		K B	•			AN AN	K.K.			
SS (PPR) ND 8940 ND			MA	Z	KA	5				n :	
85 (Ppm) NO 5940 UD UD NO	PRIORITY METALS (PDm)	C								13	
NO 6940 WD NO KE NA KE	ARSTNIC									3	
ND 8940 ND	CERONIUM									9 1	
ND 6940 BD ND	COPPER									O .	
TH T	CEAD									4	
ND 5940 ND ND ND ND ND ND ND NA NA NA	MERCURI									101	200
ND 8940 ND ND ND ND ND ND NA NA NA NA NA NA	MICKEL										
ND 6940 ND ND ND ND ND ND NA NA NA NA NA NA	DRIB									2 2	
ND 6940 ND											
ND 6940 ND ND ND NA NA NA NA NA NA	CYANIDE								0.1	MA	1-
EA MA HA NA MA		CX	769							5	1.
MA MA	PETROLEUM BYDROCARBONS (ppm)								×	i	
	PERTICICIDES/PCSe (ppb)	M.M.		~ !!							1

pps - parts per million
ppb - parts per billion
ppb - parts per billion
HO - not detected
NA - not analysed
J - compound found at less the n method detection limit
F - compound also found in lab blank

SAMPLE RESULTS SUMMARY SITE C - BLOCK 403

3 Block 403 Block 403 3 5-4-0		# 0 3 - B	403-9	403-10	403-11	401-12		
ENLATE (PPD) WA NA	Area of Concern	Block 403	Block 403	Block 403	Block 401	Bleet 400		1-500
HA H	Sample Depth	2.5-1.0	2 5-10			FOR WOOTE	Block 403	Block 403
HA HA UA HA NA NA HA NA NA HA NA	Date Sampled	07/07/07	02/01/03	01,01,01	3.3-4.0	9.5-4.0	3.0-3.3	2.5-3.0
ENLATE (PPb) WA NA WA	VOLATILE ORGANICS (pob)	47		74/10/10	01/01/92	01/01/02	26/10/10	07/07/92
HA NA BA 120 J 110	HETBYLENE CBLORIDE		Š	Y a	₹	MA	¥	42
ENLATE (Ppb) WA	1,1,1-TRICHLOROETHANE							
FRE (PDD) WA NA WA	JOENTIFIED PEAKS							
FRE	UNANOWN PEARS							
FRE	BASE NEUTRALS (ppb)	MA	N.A.	T N				
HALATE HALATE	CAPAR COMPOUNDS			5		ď.	42	ď Z
ENT. FRE.	BENIO(A) PYRENE							
FRE	BENIO(B) FLUORANTHENE							
HALATZ HA	BENEO(R) PLUORANTHENE							
FRE	CHRYSINZ							
THE 100 J 160 J 164 J 170 J 180 J 170 J 17	DIBENSO(A, B) ANTERACENE							
16 3 10 3 110 10 3 110 1	INDENO(1,2,3-C,D)PYRENE					2 12		
116 50 5 110 50								
Healartz Healartz How is a service of the service	MONTH OF THE COMPONEDS							
120 130	THE THE PARTY OF T							
(PPB) WA	BENEGICAL) PERTERNE							
130 5 3 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 100 5 10	BIS(2-ETHYLBEXYL) PETHALATE				QM			
130 J ND 1660 1660 1660 1660 1660 1660 NA MA WA NA	PLUORANTERNE							
100 J ND 1660 1660 1660 NA	PBEZANTBREZE					_		
HD 1660 1660 1705 (Ppb) WA NA	PYRENE							
1660 MA NA					NO.			
NA	DENTIFIED PEARS				1660			
MOS (Ppb) MA	mrnown peaks							
(PPE) 110 MD 120 5110 36	CID EXTRACTABLE COMPOUNDS (Ppb)	MA	HA	ИА	ВА	*	NA	N.A.
(PPE) 110 WD 120 5110 36	PRIORITY HETALS (PPM)	NA.	NA	40	411			
(9Pm) 110 MD 120 5110 36	ARBEHIC			5	C B	ď.	¥2	d Z
(PPm) 110 NO 120 5110 36	CBROMIUM							
(PPE) 110 ND 120 5110 36	COPPER							
(9Pm) 110 MD 120 5110 36	LEAD							
(PPB.) 110 ND 120 5110 36	MERCURY							
(PPm) 110 ED 120 5110 36	HICKEL							
(PPE) 110 ED 120 5110 36	SINC							
(SPB.) 110 MD 1120 5110 36								
(PPB.) 110 MD 120 5110 36 NA MA MA MA MA MA MA	CYANIDZ							
(PPB) 110 ND 1120 5110 36	PRENOLS							
NA KA KA KA KA	ETROLEUM SYDROCARBONS (ppm)	110	QR	120	5110	36	Q.	Ą
	ESTICICIDES/PCB* (ppb)	A.A.	MA	N.N.	- 1			
				i	Ç	S	ş	TIY.

NOTE:

ppm - parte per million

ppb - parte per billion

ND - not detected

NA - not analysed

J - compound found at less tha

B - compound also found in lab

	SITE C	- DDock				
			100 11B	408-12A	408-12B	
	408-P5	408-11A	408-11B	Block 408	Block 40	8
ample No.	Block 408	Block 408	Block 408	2.0-2.5	5.0-5.5	
rea of Concern	3.0-3.5	2.0-2.5	5.0-5.5	06/24/92	06/24/97	2
ample Depth	07/10/92	06/24/92	06/24/92	NA NA	NA	
nate Sampled		NA	NA	101		1
OLATILE ORGANICS (PPD)	1.4 JB					
APPROVIENE CHLORIDE	26 B					- 1
1,1,1 TRICHLOROETHANE						- 1
	ND					1
IDENTIFIED PEAKS	ND					- 1
UNKNOWN PEAKS	ND				NA	
Oliver -		NA	NA	NA	MA	
BASE NEUTRALS (PPb)						
CaPAH COMPOUNDS						1
BENZO(A) ANTHRACENE	830					- 1
BENZO(A) PYRENE	850					- 1
BENZO(B) FLUORANTHENE	930					
BENZO(K) FLUORANTHENE	760					
	1000					
CHRYSENE DIBENZO(A, H) ANTERACENE	240 J					1
INDENO(1,2,3-C,D)PYRENE	780					1
INDENO(1,2,3-C,D)						- 1
COMPOUNDS						1
NON-CAPAH COMPOUNDS	31 J					1
ACENAPHTHENE	60 J					1
ACENAPHTYLENE	140 J					
ANTHRACENE	710					
BENZO(GHI) PERYLENE	110 J					
BIS(2-ETHYLHEXYL) PHTHALAIL	97 J					
DIBUTYL PHTHALATE	1400					
FLUORANTHENE	38 J					
- FLUORENE	27 J					
NAPHTHALENE	720					
PHENANTHRENE	1800					
PYRENE	1000					
	5130					
IDENTIFIED PEAKS	5140					
UNKNOWN PEARS	5140				N.	ia .
	h) ND	NA	NA	N.A.		
ACID EXTRACTABLE COMPOUNDS (PP	מא (ממ	57.				NA
		NA.	NA	NA		(CAT)
PRIORITY METALS (ppm)	5.48				9	
ARSENIC	20.9					
CHROMIUM						
COPPER	33.7					
991707904173 578LCCCI	1200					
LEAD MERCURY	1.39					
ME.	19					
NICKEL	451	Ô				
ZINC						
	ND	Ŕ				
CYANIDE	ND	Ġ				
PHENOL			50	NI ()	170
THE POST PRONS (PORT)	NE) NI	, 50		1000 1000 1000 1000 1000 1000 1000 100	
PETROLEUM BYDROCARBONS (ppm)	distriction of the second		na na	N.	Α	NA
i bi		N.	A NA			
PESTICIDES/PCBs (PPb)	4	1				
4,4'-DDE		0				
4,4'-DDT						

NOTES :

ppm - parts per million

ppb - parts per billion NA - not analyzed

ND - not detected

J - compound found at less

than method detection lim it

B - compound also found in la b. blank

HOVNANIAN TABLE 3 (cont.) SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No.					
Area of Concern	408-13A Block 408	408-13B Block 408	408-14A	408-148	408-15
Sample Depth	2.0-2.5		Block 408	Block 408	Block 4
Date Sampled		5.0-5.5	2.0-2.5	5.0-5.5	9.0-9.
VOLATILE ORGANICS (ppb)	06/24/92	06/24/92	06/24/92	06/24/92	07/02/9
METHYLENE CHLORIDE	NA	NA	NA	NA.	
1,1,1 TRICHLOROETHANE					6.8 JB
1,1,1 IRICALOROEIRARE					ND
IDENTIFIED PEAKS					
UNKNOWN PEAKS					1064
CHAROWN PEARS					743
BASE NEUTRALS (ppb)	NA				
CAPAH COMPOUNDS	NA.	NA	NA	NA	
BENZO(A) ANTHRACENE					
BENZO(A) PYRENE					630 J
BENZO(B) FLUORANTHENE					560 J
BENZO(K) FLUORANTHENE					570 J
CHRYSENE					480 J
DIBENZO(A, H) ANTHRACENE					850 J
INDENO(1,2,3-C,D)PYRENE					85 J
INDUNO(1,2,3-C,D)FIRENE					400 J
NON-CaPAH COMPOUNDS					
ACENAPHTHENE					
ACENAPHTYLENE					180 J
ANTHRACENE					80 J
BENZO(GHI) PERYLENE					240 J
					400 J
BIS(2-ETHYLHEXYL) PHTHALATE DIBUTYL PHTHALATE					ND
FLUORANTHENE					ND
FLUORENE					1600 J
NAPETHALENE					190 J
PHENANTHRENE					74 J
PYRENE					1100 J
T T T T T T T T T T T T T T T T T T T					1600 J
IDENTIFIED PEAKS					
UNKNOWN PEAKS					5700
The state of the s					27900
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA .	NA	NA NA	NA
PRIORITY METALS (ppm)	NA				
ARSENIC (ppm)	NA	NA	NA	NA	NA
CEROMIUM					
COPPER					
LEAD					
MERCURY					
NICKEL					
ZINC					
4110					
CYANIDE					
PHENOL					
FILLION					1
ETROLEUM HYDROCARBONS (ppm)	ND	ND	ND	ND	1680
		7			
ESTICIDES/PCRs (pob)					
ESTICIDES/PCBs (ppb)	NA	NA	NA	NA	NA

NOTES

ppm - parts per million

ppb - parts per billion

NA - not analyzed

ND - not detected

J - compound found at less than method detection lim

B - compound also found in la

HOVNANIAN

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

	408-16	B408-2	B408-3 Block 408	B408-4A Block 408	B408-6 Block 408	
ample No.	Block 408	Block 408	3.0-3.5	6.0-6.5	3.0-3.5	1
rea of Concern	5.0-5.5	6.0-6.5	08/14/89	08/14/89	08/16/89	
ample Depth	07/06/92	08/14/89	08/14/69	NA		
ate Sampled	110000000000	NA	8	JВ	6.7	1
COLATILE ORGANICS (ppb)	ND		ND		49	1
CHLOROFORM	ND		ND		ND	-
ETHYLBENZENE	17 JB		6	J	14	J
METHYLENE CHLORIDE	ND		13	J	11	J
TETRACHLOROETHYLENE	ND .			•	13	J
1,1,1 TRICHLOROETHANE	ND		ND		435	-
TOLUENE	ND		ND			
XYLENES					17770	- 1
	2520		52		12990	1
IDENTIFIED PEARS	960		ND		*	
UNKNOWN PEAKS		_		NA.		
		NA	NA	NA.		
BASE NEUTRALS (PPD)					5100	J
CAPAH COMPOUNDS	ND				3630	
BENZO(A) ANTHRACENE	ND				5780	1
PENZO(A) PYRENE	1000 J				ND	
BENZO(B) FLUORANTHENE	ND				9370	
BENZO(K) FLUORANTHENE	иD				530	J
CHRYCENE	ND				- 1800	
DIBENZO(A.H) ANTHRACENE					- 1800	
INDENO(1,2,3-C,D)PYRENE	ND					
NON-Capae COMPOUNDS					1000	J
ACENAPHTHENE	ND				ND	
ACENAPHTYLENE	ND				1800	
	ND				1400	J
ANTHRACENE BENZO(GHI) PERYLENE	ND				2840	В
BIS(2-ETHYLHEXYL) PHTHALATE	ND				ND	
DIBUTYL PHTHALATE	ND				9020	
DIBUTYL PHIRALMINE	ND				1800	
FLUORANTHENE	ND				1500	
FLUORENE	ND				7650	
NAPHTHALENE	ND				11400	į.
PHENANTHRENE	ND					
PYRENE					31500	0
	ND				23800	0
IDENTIFIED PEAKS	90000				=	
UNKNOWN PEAKS				NA NA	ND	
ACID EXTRACTABLE COMPOUNDS (ppb) NA	NA	NA			
	NA.	NA	NA	NA	8.6	
PRIORITY METALS (PPM)	NA	£125			16	
ARSENIC					65.2	2
CHROMIUM					230	
COPPER					37.0	
LEAD					0.8	
MERCURY					226	ŀ
ZINC					ND 33	
CYANIDE						
PHENOLS	2930	0 1050	00 645	513	0 62 E	0
PETROLEUM HYDROCARBONS (ppm)			N.	A NA		0
PESTICIDES/PCBs (ppb)	NA				20	U

NOTES :

ppm - parts per million ppb - parts per billion ND - not detected

NA - not analyzed

J - compound found at less than method detection limit

B - compound also found in lab , blank

BOVNANIAN

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

Sample No.	B408-7	B408-16	B408-17	B408-18	B408-19
Area of Concern	Block 408	Block 408	Block 408	Block 408	Block 40
Sample Depth	3.0-3.5	3.5-4.0	3.5-4.0	3.5-4.0	4.5-5.0
Date Sampled	08/16/89	07/09/92	07/09/92	07/09/92	07/10/92
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA	07/10/92
CHLOROFORM					ND
ETHYLBENZENE					ND
METHYLENE CHLORIDE					
TETRACHLOROETHYLENE					5.8 B ND
1,1,1 TRICHLOROETHANE					
TOLUENE					36 B
XYLENES					ND
					ND
IDENTIFIED PEARS					
UNKNOWN PEAKS					52
					4.3
BASE NEUTRALS (ppb)	NA	NA			
CaPAH COMPOUNDS	100	NA.	NA	NA	
BENZO(A) ANTHRACENE					
BENZO(A) PYRENE					5800 J
BENZO(B) FLUORANTHENE					1400 J
BENZO(K) FLUORANTHENE					4800 J
CHRYSENE					4700 J
DIBENZO(A, H) ANTHRACENE					7600 J
INDENO(1,2,3-C,D)PYRENE					510 J
INDENO(1,2,3-C,D)PIRENE					1900 J
NON-CAPAH COMPOUNDS					
ACENAPHTHENE					
ACENAPHTYLENE					1600 J
ANTHRACENE					ND
					2200 J
BENZO(GHI) PERYLENE					1700 J
BIS(2-ETHYLHEXYL) PHTHALATE					ND
DIBUTYL PHTHALATE					ND
FLUORANTHENE					17000
FLUORENE					1300 J
NAPHTHALENE					
PHENANTHRENE					1100 J
PYRENE					15000
					14000
DENTIFIED PEAKS					2222
NKNOWN PEAKS					8000
					4000
CID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	NA
IORITY METALS (ppm)	NA	NA	NA	NA.	NA
ARSENIC			(E)(CO)(E)	1.01	MA
CEROMIUM			040		
COPPER					
LEAD					
MERCURY					
ZINC					
CYANIDE					
PHENOLS					
TROLEUM HYDROCARBONS (ppm)	9280	60	30	ND	1690
STICIDES/PCBs (PPb)	ND	NA	NA	NA.	
PCB-1254		173376	4141	PLA .	NA

ppm - parts per million

ppb - parts per billion ND - not detected

NA - not analyzed

J - compound found at less

than method detection limi

B - compound also found in lab

HOVNANIAN

TABLE 3 (cont.)

SAMPLE RESULTS SUMMARY

SITE C - BLOCK 408

				B408-23	B408-24
	B408-20	B408-21	B408-22	Block 408	Block 408
ample No.	Block 408	Block 408	Block 408	10.5-11.0	10.5-11.0
sea of Concern	10.5-11.0	10.5-11.0	10.5-11.0	07/10/92	07/10/92
ample Depth	07/10/92	07/10/92	07/10/92	NA.	NA
te Sampled	NA NA	NA	NA	100	
DLATILE ORGANICS (PPb)					
CHLOROFORM					1
ETHYLBENZENE					1
METHYLENE CHLORIDE					1
TETRACHLOROETHYLENE					1
1,1,1 TRICHLOROETHANE					1
TOLUENE					1
XYLENES					1
KILENDS					
IDENTIFIED PEARS					
UNKNOWN PEAKS					NA
ONKHOW!		NA	NA	NA	, NA
BASE NEUTRALS (ppb)	NA				
CaPAH COMPOUNDS					
BENZO(A) ANTHRACENE					
RENZO(A) PYRENE					
BENZO(B) FLUORANTHENE					
BENZO(K) FLUORANTHENE					
CHRYSENE					(
DIBENZO(A, H) ANTHRACENE					
INDENO(1,2,3-C,D)PYRENE					
CONDOUNDS					
NON-CAPAR COMPOUNDS					
ACENAPHTHENE					
ACENAPHTYLENE					
ANTHRACENE					
BENZO(GHI) PERYLENE					
BIS(2-ETHYLHEXYL) PHTHALATE					
DIBUTYL PHTHALATE					
PLUORANTHENE					
FLUORENE					
NAPHTHALENE					
PHENANTHRENE					
PYRENE					
					2120
IDENTIFIED PEAKS					2
UNKNOWN PEAKS				NA	NA
	h) NA	NA	NA	2135	
ACID EXTRACTABLE COMPOUNDS (PP	,			NA	NA
	NA	NA	NA	101	
PRIORITY METALS (PPM)					
ARSENIC					
CHRONIUM					
COPPER					
LEAD					
HERCURY					
ZINC					
CYANIDE					
PHENOLS					NI
	NI	NE	26	Ои	N
PETROLEUM HYDROCARBONS (ppm)	NL	•66 F.			NJ
	NJ.	NI	A NJ	N/A	,
PESTICIDES/PCBs (ppb)	10				

NOTES :

ppm - parts per million ppb - parts per billion

ND - not detected

NA - not analyzed
J - compound found at less
than method detection limi
B - compound also found in lab

KHOV005904

SAMPLE RESULTS SUMMARY SITE C - BLOCK 409 HOVNANIAN TABLE 4

											_	
	B409-8	Block-409	2.5-3.0	07/10/92		ND	2.7 JB		QN	ON		37
	B409-6	Block-409	10.5-11.0	07/10/92	NA							ND
	B409-5	Block-409	10.5-11.0	07/10/92	NA							ND
	B409-4	DIOCK-409	0.11.0	01/10/92	AN							O
c 0040	Block-409	10.5-11.0	07/10/62	NB NB	Y.						422	Q Z
B409-2	Block-409	10.5-11.0	07/10/92	AN			10				CX	2
B409-1	Block 409	10.5-11.0	07/10/92	NA							ND	
Sample No.	Area of Concern	Sample Depth	Date Sampled	VOLATILE ORGANICS (ppb)	METHYLENE CHLORIDE	1,1,1-TRICHLOROETHANE	· doe-	IDENTIFIED PEAKS	UNKNOWN PEAKS		PETROLEUM HYDROCARBONS (ppm)	

NOTES :

ppm - parts per million ppb - parts per billion

ND - not detected

NA - not analyzed

than method detection limit J - compound found at less

B - compound also found in lab. blank

KH0V005905

		5	ITE E - BLOCK	404					
		-				B40	4-3	B404-4	404-2
			T88-WILl	T259AC-1	B404-2		404	Block 404	Block 404
	T-92W	T8B-WIL	Block 404	Block 404	Block 404		-18.5	18.0-18.5	2.5-3.0
ample No.	Block 404	Block 404	6.0-6.50	6.0-6.50	6.0-6.50			08/18/89	06/25/92
rea of Concern	6.25-6.75	6.0-6.50	08/18/89	08/15/89	08/17/89		8/89	MA	NA
Sample Depth	08/14/89	08/18/89	NA NA	NA			i.a.	gua.	
see Sampled	NA	на	HA			JB			
POLATILE ORGANICS (PPb)					7.3	JB			
CHLOROFORM					8.2	JB			
TETRACHLOROETHYLENE									
1,1,1-TRICHLOROETHANE					ND				
*/					מזא				
IDENTIFIED PEAKS					•				
UNKNOWN PEAKS							NA	NA	HA
UNANOTH 2		NA	NA	N.A.					
BASE NEUTRALE (ppb)	AK	•			6470				
BASE NEUTRALIDE					u=035000				
CAPAH COMPOUNDS BENZO(A) ANTHRACENE			휳		6140				
BENZO(A) ANTHOUSE	•				11900				
BENZO(A) PYRENE					6820				
BENIO(B) FLUORANTHENE					750	J			
CHRYSENE			3.	20	2140				
DIBENZO(A,H) ANTHRACENE									
INDENO(1,2,3-C,D) PYRENE		50							
					460	J			
NON-CAPAH COMPOUNDS					750	3			
ACENAPHTHENE					1900			20	
ACENAPHTHYLENE					19100				
A COMPANY ACTIVE									
BIS(2-ETHYLHEXYL) PHTHALATE					1600	J			
BIS (2-ETHILAZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ					770	J	Marine C		
BENZO(GHI) PERYLENE		20			12600				
BUTYL BENEYL PHTHALATE					540	J			
FLUORANTHENE					200	J			
FLUORENE					8110				
NAPHTHALENE					11400				
PHENANTHRENE									
PYRENE					47500				
					5280				
IDENTIFIED PEAKS		(*)							HA
UNKNOWN PEAKS					ДK		HA	MA	RA
William Designation of the Control o		NA	NA	NA					
ACID EXTRACTABLE COMPOUNDS (ppb) NA						MA	NA	na "
AC. 0		NA	HA	NA	4.7				
PRIORITY METALS (PPM)	NA	,,,,							
					2.1				
ARSENIC					21		2*		
CADMIUM					58.4			40	
CHRONIUM					273	ı			
COPPER					1.1	7			
LEAD					59				
HERCURY					3.0	0			
NICKEL					33				
SILVER					33.	20			
ZINC					2.	D			
					NI NI				
CHINADA					NI	•			
CYANIDE					11	70	ND	MD	315
PHENOLS		30	8.	42	11	, ,		192	
PETROLEUM HYDROCARBONS (Ppm)	N	D 3.					NA	NA	NA.
PETROLEUM MIDROCALO			N.	NJ.		1041	n.a		
(mb)	N.	A N	^			3			
PESTICIDES/PCBs (PPb)						22			
4,4'-DDT					1	8			ACCURAGE CONTRACTOR OF THE STATE OF THE STAT

HOTES 1

ppm - parts per million
ppb - parts per billion
ND - not detected

NA - not analyzed

J - compound found at less

than method detection limit

B - compound also found in lab. blank

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HOVNANIAN TABLE 6

SAMPLE RESULTS SUMMARY SITE E - BLOCK 405

Sample No.	405-1	405-2	405-3	405-4	B405-	
Area of Concern	Block 405	Block 405	Block 405	Block 405		
Sample Depth	2.5-3.0	2.5-3.0	2.5-3.0	2.5-3.0	Block 4	
Date Sampled	06/23/92	06/23/92	06/23/92	06/23/92	15.5-16	
VOLATILE ORGANICS (ppb)	NA	NA	NA	NA NA	08/18/8	39
CHLOROFORM				1100	8.9	JВ
1,1,1-TRICHLOROETHANE					6.4	JB
IDENTIFIED PEAKS					ND	
UNKNOWN PEAKS					ND	
BASE NEUTRALS (ppb)	NA	NA	NA		ND	
Capah Compounds						
BENZO(A) ANTHRACENE					85	_
BENZO(A) PYRENE						J
BENZO(B) FLUORANTHENE					93 160	J
CHRYSENE				200 ј		J
DIBENZO(A, H) ANTHRACENE				200 3	96	J
INDENO(1,2,3-C,D) PYRENE					20	J
					63	J
NON-CAPAH COMPOUNDS						
ACENAPHTHYLENE						1
ANTHRACENE					10	J
BENZO(GHI) PERYLENE					20	J
BIS(2-ETHYLHEXYL) PHTHALATE					55	J
FLUORANTHENE				390 ј	1800	J
FLUORENE		2		6300 J	190	J
NAPHTHALENE		3		3800 J	ND	
PHENANTHRENE	50			9500	ND	
PYRENE				1300 ј	110 150	J
IDENTIFIED PEAKS				1300 0	150	J
UNKNOWN PEAKS				1039000	ND	
				176000	ND	- 1
ACID EXTRACTABLE COMPOUNDS (ppb)	NA	NA	NA	NA	ND	
PRIORITY METALS (ppm)						
CHROMIUM	NA	NA	NA	NA		
COPPER					28.9	
LEAD					14	
NICKEL					39	
ZINC					22	
					49.5	
CYANIDE						
PHENOLS					ND	
					ND	
ETROLEUM HYDROCARBONS (ppm)	ND	DM	ND	4220	NA	\dashv
ESTICIDES/PCBs (ppb)	NA	NA	NA NA	NA		
		17025	ALER	MA	ND	

NOTES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not analyzed

J - compound found at less than method detection limit HOUNANIAN

TABLE 7

SAMPLE RESULTS SUMMARY SITE E - BLOCK 406

									1	8-106-8	B406-9	
							2-3010	B406-6	B406-7			
				2-908-2	B406-3	B406-4			307	Block 406	Block-406	
	4143-1	T206N	B406-1			907 40014	Block 406	Block 406	Block 400			
Sample No.		•	9 40 to	Block 406	Block 409	מבי עססדם		,	5.5-6.0	10.0-10.5	10.5-11.0	
	Block 406	Block 406	DIOCK ASS		,	10.5-11.0	9.0-9.5	1.0-1.5			10/01/20	_
Area of Concern	10		5.5-6.0	10.0-10.5	0.0-0.0		,	20/00/24	07/09/92	01/09/05	01/10/20	_
4	6.0-6.5	0.1-0.0			20/00/50	07/09/92	01/00/10	2160110				_
Sample Deptu		98/11/00	07/09/92	07/09/92	20110		:		K Z	42		_
100	08/12/89	2011100		;	NA	N.A.	ď.				QN	_
Date bampted	;	A'X	NA	4				2.4				_
DRIORITY METALS (ppm)	ď Z										13.4	_
								26.1				_
ARSENIC											7.7	
•								58.3			G.	_
CHROMIUM								209			2	_
5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6								•			QX	_
COPPER								1.40				_
TEAD											14	
								2.5			,	_
MERCURY								50	•		O.K.	_
											32.4	
NICKEL								134				
SELENIUM												T
										CN	QN	_
SINC		2000					QN	54	O'K	2		
			ş	210	25	ž						7
PETROLEUM HYDROCARBONS (PPM)	dN (a	QX										
								*				

NOIES :

ppm - parts per million

ppb - parts per billion

ND - not detected

NA - not enalyzed

KH0V005908

HOVNANIAN
TABLE 8
SAMPLE RESULTS SUMMARY
SITE E - BLOCK 407

STATE CONCERT STATE CONCER	Camp o Mo							
Block 407 Block-407 Block-407 Block-407 Block-407 3.5-4.0 3.5-4.0 9.0-8.5 5.0-5.5 5.0-5.5 2.6 JB 1.9 JB		407-1	407-2	407-4	407-5	A-704	1 107	
PENE 1.9 19 19 NA	Area of Concern	Block 407	Block-407	Block-407	10010		1-100	407-8
PRINT STATE OF STATE	Sample Depth	3,5-4.0	0 7 5 6	0 0 0 0	DTOCK-401	Block-407	Block-407	Block-407
PPD) 2.6 JB 1.9 JB NA	Date Sampled	07/02/02	07/07/0	6.8-0.6	5.0-5.5	5.0-5.5	5.0-5.5	5.0-5.5
TENE 12 J 6.6 J 1.9 JB NA	VOLATILE ORGANICS (ppb)		76170110	01/03/92	07/03/92	07/03/92	07/03/92	07/03/92
TENE 12 J MD TENE 12 J G.6 J THENE 12 J G.6 J		2.6 JB	1.9 JB	Ę.	V	NA	NA	NA
TENE 12 J ND	BASE NEUTRALS (ppb)							
PENE 12 J	CaPAH COMPOUNDS			K Z	N.A	NA	NA	NA AN
12 J	BENZO(A) ANTHRACENE		ļ					
POUNDS (PPb) ND	BENZO(A) PYRENE		2					
14 J 9.8 J 12 J 14 J ND ND ND 1330 ND 1330 ND 1330 ND 131 1.1 1.2 NA	BENZO (B) CITIZETTE	77	6.6 3					
22 J 14 J ND ND 1330 ND 1340 ND 1350 ND 135	CENTRO (B) FUCONANIHENE		14 3	×				
POUNDS (Ppb) ND ND ND NA	CHKISENE		9.8 3		2			
POUNDS (ppb) ND	NON-Capah Compounds							
POUNDS (ppb) ND ND ND ND ND ND ND ND ND N	FLUORANTHENE	77 7	;					
ND ND ND NA	THE WANTED THE	0	·					
POUNDS (ppb) ND ND NA	anguar music	Q	8.5 4					
POUNDS (PPb) ND ND NA	FIRENE	21 J	13 J					
POUNDS (PPb) ND ND NA	Contract Conditional							
POUNDS (PPb) ND ND NA	DENIIL IED FEAKS	ND	ND			140		
POUNDS (Ppb) ND ND NA	UNKNOWN PEAKS	1330	QN					
POUNDS (Ppb) ND ND NA								
1.1 1.2 NA	ACID EXTRACTABLE COMPOUNDS (PPb)	QN	ND	NA	NA	NA	NA	NA
1.1 1.2 NA	PRIORITY METALS (ppm)							
S	ARSENIC		•	ď.	NA	NA	NA	N.
15.9 8.5 40 8.5 8.7 6.5 50.9 31.2 ND ND NA	CHROMIUM	• 0	7.7					
15.9 30.4 40 8.5 8.7 6.5 50.9 31.2 ND ND NA	COPPER	o .						
SO 9 S 5 S 5 S 6 5 S	LEAD	6,08	30.4					
SO.9 31.2 ND NA NA NA NA NA NA NA	NICKEL	9	. S					
SO.9 31.2 ND ND NA		8.7	6 . 5					
ND ND NA NA NA NA NA NA	ZINC	50.9	31.2		73			
IS (Ppm) ND ND NA NA NA NA NA NA NA NA	CYANIDE	S	ý	;				
IS (PPm) NA	PHENOLS	9	2 !	¥2	NA	NA	NA	N.
15 (PPm) NA NA ND ND 130 28 NB ND ND NA		S.	Q	K N	NA NA	NA	NA	NA
ND ND NA NA NA NA NA NA	ETROLEUM HYDROCARBONS (ppm)	NA	4X	Š				
ND ND NA NA NA NA			•	Q	QX	130	28	180
AN CN	ESTICIDES/PCBs (ppb)	NO OX	QN	AN.	a N	77.2		
				•		Y.	ď.	NA

KHOV005909

J - compound found at less than method detection limit B - compound also found in lab. blank

ND - not detected NA - not analyzed

ppm - parts per million ppb - parts per billion

NOTES :

APPENDIX A

TEST PIT AND BORING LOGS

SHEET _ OF _ I

JOB NO.							
CLIE			PRO	DJECT			
89102 H	OV			SITE-	C		
LOCATION			ELE	VATION AND DA	TUM		_
NEWARK, N.J.							
DRILLING CONTRACTOR	DRILLER	-	SAMPLER		INSP	ECTOR	-
J.M. SCREE INC	S. GRA	55C	B. 120	HISER		KAISER	
DRILLING RIG TYPE	SIZE AND TY		DATE	STARTED	•	DATE COMPLETED)
Simce 2800	4"c0 Dr	ZAC BIT		8-14,89		8:14,59	
SAMPLER TYPE	HAMMER	DROP		L DEPTH		WATER LEVE	1
STAINLESS STEEL HAND AUGE	17 10111			6.75'		ENCOUNTERED STABILI	ZEO
BORING/ SAMPLES							
CONSTRUCTION NO. RECOVERY BLOWS	DEPTH KY	DES	CRIPTION	OF SOILS		REMARKS	
FT. BLOWS	3					,	
- 1 1 1	F -	CONCRE	TE				
-	L , _	0-1-		•			-
-		A Second		SIETY LONN	~		
_	- 2 -	GRAVE	-		1		
_ .					1		
.							
	h 3 -						- 1
	F 11				- 1		
	F 4 - 1				- 1		- 1
-	F - 1. 1						
-	F 5 - 1					æ	- 1
-	F 1 1						
-							
T-92W				<i></i>	-		
-							
		COMPLET	ICH CE	BORING			- 1
_							
	3 -						
_	F 7 - 1				1		
	F 1 1						
-	- 10 -						
	1						
-	h - 1						I
	- 11						
-							
						*	
						*	
	F - 1						
_							
	_						
	1				1	A14A8EA 4 4	
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	5	BORIN	G LOG		SHEET OF
	JM Sorge, Inc.				
-1	IOR NO			PROJECT SITE-	c
	89102 Ho	٧		ELEVATION AND DA	
•	LOCATION				INSPECTOR
8 8	DRILLING CONTRACTOR	DRILLER	SAME	ILER IVAISER	B. KAISER
. e	J.M. SCREE INC	S. GRASS	<u>C</u>	DATE STARTED	DATE COMPLETED
	DRILLING RIG TYPE	4"CD DRA	*	8.14.89	WATER LEVEL
	SIMCE 2800 SAMPLER TYPE	HAMMER	DROP	TOTAL DEPTH	ENCOUNTERED STABILIZED
	STRINLESS STEEL HAND AUGEN	4		1 0.3	
	SAMPLES	DEPTH H	DESCRI	PTION OF SOILS	REMARKS
	CONSTRUCTION NO. RECOVERY BLOWS/6	FT.		1.	
		F 11	BLACK SILT	Y LOAM	
		H 1 - 1			
	-	L 2-1	Biacu Gazza	CLAY LOAM	
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JM Sorge, Inc.

BORING NO. 8405-2 SHEET 1 OF 1

	JOB NO.		-	CLIENT								
	89102								PROJECT			
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	. NEWARI	K N.	\overline{L}						ELEVATION AND DA	TUM		_
	DRILLING CONTRAC	TOR			DRILLER	?		CANA	PLER	_		
	J.M. SURGE	E INC	_		5.6		550				ECTOR	
1	DRILLING RIG TYPE	=			SIZE AN	DTY	PE OF BIT	0	KAISER	TB	. KAISER	
L	Since 2	800					eac BIT		DATE STARTED		DATE COMPLETED	
	SAMPLER TYPE				HAMMER	131	DROP		8-14,89		8.14.85	
L	STAINLESS S	STEEL	HAND	AUGER	WEIGHT		-		TOTAL DEPTH		WATER LEVEL	ZEI
	0.20		SAMPLES			σ			6.5			_
	BORING/ CONSTRUCTION	NO.	RECOVERY		DEPTH	WATER	nes	CRIPT	TION OF SOILS			
1		NO.	FT.	BLOWS/6"	FT.	3	523	Civii	TON OF SUILS		REMARKS	
1	•						BLACK 310	-	Lean			
-	-						ASPHALT		CORTIC			
-	6											
-	-				1		REDIBER	.564	SANDY LOAM			
-					- 2 -		BRICK	٠.٩	SHARY COAM	- 1		
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		8 408-2		-	- 3 -							
					1		Rem / Bize	-1d	SANDY LOAM			
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CATION							1				
NEWARK	. N.J						SAMPI	rp.	INSPE	CTOR	
RILLING CONTRACTO				DRILLER			Contractor Contractor			KAISER	_
J. M. SCREE	TNC			S.60				KAISER		DATE COMPL	
	THE			SIZE AND	TYP	E OF BIT	- 1	DATE STARTED		a a	
RILLING RIG TYPE	_			4"00	DR	AL BIT		8.14.84		WATER	
Sirker 28	100			HAMMER		DROP		TOTAL DEPTH		ENCOUNTERED	STABILIZED
AMPLER TYPE			Oca F D	WEIGHT		-		6.5			
STAINLESS S	TEEL H	IAND	MOECIC	1	œ						
BORING/	5.	AMPLES		DEPTH	WATER	DE	SCRIP	TION OF SOILS		REMAR	KS.
CONSTRUCTION	NO.	RECOVERY F1.	BLOWS/6"	FT.	3					<u> </u>	
		F1.				DARK BO	SCHOR	4 Soil		1	
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-				L -	4	DARK BOY	M (200	LOAM, WOOD			
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-				L.	1	Brown L	-C+W	C, GRAVEL			
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	B4C5-3	1		-	1	1					
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JOB NO.	-										
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89102			Ho	V				SITE-	C		
LOCATION NEW ARI	۷ N.	7						ELEVATION AND DA	TUM		
DRILLING CONTRACT				DRILLER	!		CAME	PLER	Times		_
J. M. Screet	INC	-		5.6		550		KAISER		ECTOR	
DRILLING RIG TYPE						PE OF BIT	9	DATE STARTED	10	. KAISER	_
Since 28								*)		DATE COMPLETED	
SAMPLER TYPE	300			HAMMER	_ D1	DROP		8-14-89		8.14.89	_
STAINLESS S	TEE	HAND	007.85	WEIGHT		_ 0,007		TOTAL DEPTH		WATER I EVET	ED
3,1,1,1	1	SAMPLES			T ~			6.5			_
BORING/ CONSTRUCTION	NO.	RECOVERY		DEPTH FT.	WATER	DES	CRIP	TION OF SOILS		REMARKS	
<u> </u>	NO.	FT.	BLOWS/ 6.	F.1.	₹			* ************************************		REMARKS	
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H			-	- 1 -	12	REDIBIL	MCJ0	SILTY LOAM			
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E JM S	org	ge.	// C.					PROJECT			
JOB NO.		(CLIENT					SITE - (
89102			Ho	1				ELEVATION AND DAT			
LOCATION											
. NEWARK	N.J	-		DRILLER			SAMP	LER	INSPE	CTOR	
DRILLING CONTRACTO		-000						KAISER	B	KAISER	The state of the s
J.M. SCREE	INC			5.60			- 3	DATE STARTED	-	DATE COMPL	ETED
DRILLING RIG TYPE						E OF BIT		8.15.39		8.15	ક્રલ
Since 28	00					AL BIT		TOTAL DEPTH		WATER ENCOUNTERED	I EVE!
CAMPLED TYPE				HAMMER WEIGHT		DROP		8,5		ENCOUNTERED	
STAINLESS ST	EEL 1	MAND	AUGER	110				3.3			
STAINLESS OF	5	AMPLES		DEPTH	ER	DE	ccpie	TION OF SOILS		REMAR	KS
BORING/		RECOVERY	BLOWS/6"	FT.	WAT	, 08	SURIF	11014 01 00			
CONSTRUCTION	NO.	FT.	BLOWSIG		-			SANDY LOAM			
						RED 1320	النانا	SAMOY POLIT	FI	1	
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JOB NO.										
89102			CLIENT	2.4				PROJECT		
LOCATION			Ho	<u> </u>				SITE-	\overline{C}	
. NEWARK	2 N.	T						ELEVATION AND DAT	TUM	
DRILLING CONTRACT		<u> </u>		DRILLER	1		CAN	PLER	1.	
J.M. SCREE				5.6		650				ECTOR
DRILLING RIG TYPE						PE OF BIT	0	DATE STARTED	1 18	, KAISER
Simce 28	500			4"00		CAL BIT				DATE COMPLETED
SAMPLER TYPE				HAMMER	131	DROP		TOTAL DEPTH		8.16.39
STAINLESS S	TEEL	HAND	Augen	WEIGHT		-		3.5'		WATER LEVEL
		SAMPLES		1-	1 œ	T		3.3		
BORING/ CONSTRUCTION	NO.	RECOVERY FT.		DEPTH FT.	WATER	DES	CRIP	TION OF SOILS		REMARKS
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JM Sorge, Inc. PROJECT CLIENT SITE - C JOB NO. HOY 89102 ELEVATION AND DATUM LOCATION MEWARK, N.J INSPECTOR SAMPLER DRILLER DRILLING CONTRACTOR B. KAISER B. KAISER S. GRASSC DATE COMPLETED J.M. SCREE INC DATE STARTED SIZE AND TYPE OF BIT 8.16.89 DRILLING RIG TYPE WATER LEVEL STABILIZED STABILIZED S.O. 3,16,39 4"CD DRAG BIT Since 2800 TOTAL DEPTH DROP HAMMER SAMPLER TYPE 8.51 WEIGHT STAINLESS STEEL HAND AUGER REMARKS DESCRIPTION OF SOILS SAMPLES DEPTH BORING/ RECOVERY CONSTRUCTION BLOWS/ 6 NO. RED BROWN LOOM, GRAVEL BLACK BROWN LONIN GRASEL Brown war, coal Dr. Brewn SILTY CLAY LEAIL B408-7 COAL, GRAVEL CEMPLETION OF BORING 6408-7A KH0V005918



SHEET 1 OF 1

JOB NO.			CLIENT					Т		
89102			Ho	/				PROJECT	~	
LOCATION			, (0	4				SITE-	<u>C</u>	
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DRILLING CONTRACT	TOR			DRILLER	?		SAMI	PLER	1	
J. M. Scree	INC	_		5.6	RSA	530		KAISER		PECTOR
DRILLING RIG TYPE				SIZE AN	DTY	PE OF BIT	1_3	DATE STARTED	1 6	3. KAISER
Since 28	800					ZAG BIT		200		DATE COMPLETED
SAMPLER TYPE				HAMMER		DROP		TOTAL DEPTH		8-16.59
STAINLESS S	TEEL I	HAND	AUGER	WEIGHT		-				WATER LEVEL
BORING/	5	AMPLES		1	œ			6.C'		
CONSTRUCTION	NO.	RECOVERY	BLOWS/6	DEPTH FT.	WATER	DES	SCRIP	TION OF SOILS		DEMARKS
		FT.	BLOWSIE		3					REMARKS
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89102			70	4				ELEVATION AND DA	TUM		
OCATION		_									
NEWARK	N.J			DRILLER			SAME	LER	INSPE	CTOR	
DRILLING CONTRACTO	OR			S.60			Street Control	KAISER	B	. KAISER	
J.M. SCREE	INC					E OF BIT	7	DATE STARTED		DATE COMP	LETED
DRILLING RIG TYPE						*		4.16.89		8.16	. 9-17
Since 28	300					DROP		TOTAL DEPTH		WATER ENCOUNTERED	LEVEL
SAMPLER TYPE				HAMMER WEIGHT		-		4.5		S'C	5.0
STAINLESS S	TEEL 1	MAND	AUGER							V	~
	9	AMPLES		DEPTH	ER	ns	CCBIE	TION OF SOILS		REMAR	₹K5
BORING/ CONSTRUCTION	NO.	RECOVERY	BLOWS/6"	FT.	WAT		JUNI				
CONSTITUTION	NO.	FT.			-	CONCE	EV	5			
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89102			Ho	<u> </u>				SITE-	C	
LOCATION		 -						ELEVATION AND DA	TUM	
. NEWARK		7		DRILLER						
DRILLING CONTRACT				1			1	PLER		ECTOR
J. M. SCREE				5.6	1510	550	В	KAISER	B	. KAISER
DRILLING RIG TYPE						PE OF BIT		DATE STARTED		DATE COMPLETED
SIMCE 28	300			HAMMER	Dr	RAL BIT		8.16.39		8.16.57
			^	WEIGHT		DROP		TOTAL DEPTH		WATER LEVE!
STAINLESS S	1		T					3.51		STABLET STABLET
BORING/		SAMPLES	-	DEPTH	ER					
CONSTRUCTION	NO.	RECOVERY FT.	BLOWS/6-	FT.	WAT	DE	SCRIP	TION OF SOILS		REMARKS.
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10B NO.		C	Ho	J			\rightarrow	SITE-C						
89102			, (0				1	ELEVATION AND DAT	UM					
LOCATION MEWARK	N.T	-						INSPECTOR						
MEWHER	IP.			DRILLER			SAMPI	KAISER	1	KAISER				
DRILLING CONTRACTO	TNE			S.60				DATE STARTED		DATE COMPLETED]			
J. M. SCIECE	THU			SIZE AND			-	9.17.39		8017089	1			
DRILLING RIG TYPE	60					DROP	-	TOTAL DEPTH		WATER LEVEL				
CAMPLED TYPE				HAMMER WEIGHT		- DROP		3.5	1	ENCOUNTERED	1			
STAINLESS S	TEEL 1	IAND	AUGETL					3.3						
STAINLESS	S	AMPLES		DEPTH	WATER	nı	SCRIP	TION OF SOILS		REMARKS	1			
BORING/ CONSTRUCTION	NO.	RECOVERY	BLOWS/6"	FT.	¥ ¥									
CONSTRUCTION	NO.	FT.		-	1-1	CONC	RET	Έ						
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BORING NO. 789 WIL

JOB NO.	CLIENT										
89102	Ho					PROJECT					
LOCATION	110	<u> </u>				SITE-					
MEWARK, N.J	-					ELEVATION AND DATUM					
DRILLING CONTRACTOR		DRILLER			SAME	PLER	INCR	ECTOR			
J.M SCROE INC		5.6	245	30		KAISER					
DRILLING RIG TYPE		SIZE AND	TYF	E OF BIT		DATE STARTED	_ B	B. KAISER			
Since 2800				AL BIT		8-19-59		DATE COMPLETED			
SAMPLER TYPE		IHAMMER		DROP		TOTAL DEPTH		S-18-39 WATER LEVEL			
STAINLESS STEEL H	AND AUGER	WEIGHT		-		6.5'		MAIEM CHESTAUCONS	STABILIZED		
BORING/ SA	MPLES		œ			6,5					
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	JM ScizGE	INC	SIZE AND TYP	E OF BIT	DATE STARTED	10	DATE COMPLETED	
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DRILLING RIG TYPE				SIZE AND TYPE OF BIT				I SHOULD WORK AND I SHOULD AND INCIDENT AND		8.15.	39
Since ?	1500					DRAG BI	7	TOTAL DEPTH		WATER	LEYFI
SAMPLER TYPE				HAMMER WEIGHT		DROP	_	18.5		ENCOUNTERED	17.0
STAINLESS ST	FEL H	A QUE	SUER					10.0		A	4
STATAGE	. 5	AMPLES		DEPTH	ATER	pr		TION OF SOILS		REMAR	KS
BORING/ CONSTRUCTION	110	RECOVERY	BLOWS/6.	FT.	WAT	UE	SCRIF	HON OF SOILS			
CONSTRUCTION	NO.	FT.	BLUWS/6	-							
						BROWN					
				_ 2 _		FILL-B	RICK	ASH, WOOD, COAL,	RCCK	•	
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JOB NO.			CLIENT					T			
89101			He					PROJECT			
LOCATION			110	24				SITE - E			
NEWARK	N	· J.						ELEVATION AND DAT	UM		
DRILLING CONTRACT	ror			DRILLER	1 .		CANA	PLER			
JM Scize:				13		755.05 DIE			1	ECTOR	
DRILLING RIG TYPE				SIZE AN	D TY	PE OF BIT		3. Koiser	<u>"B</u>	KAISER	
Simco	2500					DRAG BI	_	DATE STARTED		DATE COMPL	LETED
SAMPLER TYPE				HAMMER	20	DROP		3.18.89		2.18	. 54
STAINCESS ST	nessi Li	arin 6	LV = a	WEIGHT		- -		TOTAL DEPTH		WATER ENCOUNTERED	LEVET
1		SAMPLES			T~			18.2,			
BORING/ CONSTRUCTION		RECOVERY		DEPTH	WATER	ne.	CDID	TION OF SOILS			
	NO.	FT.	Bromz16.	FT.	3	l DE.	SCRIP	HON OF SOILS		REMARI	K S
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L							1	A, WOOD, CEAL, RO	دديو		
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JOB NO. CLIENT	14	SITE - E	
89101 Ho	Υ	ELEVATION AND DATE	JM
LOCATION	V Common of the		
NEWARK, N.J.	DRILLER	SAMPLER	INSPECTOR
DRILLING CONTRACTOR	S. Granssa	B. KDISER	B. KAISER
JM SCROE INC	SIZE AND TYPE OF BIT	DATE STARTED	DATE COMPLETED
DRILLING RIG TYPE	4" CD DRAG BI"	8.18.89	S.15.59 WATER I EVE!
Simce 2500	HAMMER DROP	TOTAL DEPTH	ENCOUNTERED STABILIZED
SAMPLER TYPE	WEIGHT	16.0	
STAINLESS STEEL HAND AUGER	α	- 11	REMARKS
BORING/ SAMPLES	DEPTH LY DES	SCRIPTION OF SOILS	REMARKS
CONSTRUCTION NO. RECOVERT BLOWS/6		E, 1" STONE	
	-2 - BROWN	LOAM, BRICK, WCC	0
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	BORING NO				LO	CAT	TON-	Bl. 409		
	JOB NUMBE				PR	OJE	CT. K	HOVMANITANI		
	DRILLING C	ONTRA	CTOR:	MILLTOWN	DRILLIN	G A	VD F	XCAVATION		~
	DRILLING M	ETHO	: SOLI	D STEM AUG	SER			DRILLER: A. UN	ITAMO	
	BIT SIZE/1	TYPE: 4	" DRA	G				SAMPLER: A. H		
	SAMPLER T	YPE:						INSPECTOR: A.	LEFERON	
	HAMMER WE	IGHT:			DR	T1 1 T1	VG D	ATES		
	STROKE LE	NGTH:		ST	ART: 7/			INISH: SAME	ELEVATION: -	
			CAMDI		1			INION. SAME	TOTAL DEPTH: 11	
1	PROFILE	NUMBER	SAMPI	3000, 40 mile	DEPT	4 4]	STD	ATIGRAPHY	
-		NUMBER	REC.	BLOWS/8 IN]	1 3		SIN	ATIGRAPHY	
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ir	100000			8		1		drown slity loa	m with construction	
5	20 00 D				-2	+	1	debris.		
	The total				-	+-	-			
Ŀ	· · · · · · · · · · · · · · · · · · ·		l		-4	-] [Dark brown/bla	ick clayey silt with	
1					-	-		ebbles.	, , , ,	
-	*				-6	-	1			
	19.19.19.1					-				
-	or an an an an				-8	L	F	led/brown clay	104 cilt ville at all	
-	nananan n						1	TOTAL LINE	ey silt with shale	
-	nananan				10	Z	1 '	ragments. Wat	er at 10 ft.	
-	and the same			Ī	40	-				
:		B409-1		Ī		t				
:	THE PROPERTY		.		-12	-		*		
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-	TERRITOR TO		1	+	-14	-				
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	D400-	2		LOCA	TION:	Bl. 409	
BORING NO.: JOB NUMBER	AAAFA			PROJE	CT: I	K. HOVNANIAN	
DE NUMBER	NTRAC	TOR: 1	MILLTOWN D	RILLING A	AND E	XCAVATION	7.11.0
DRILLING CO	ETHOD:	SOLIC	STEM AUG	ER		DITALLE IN THE	TAMO
BIT SIZE/T	YPF. 4"	DRAG				SAMPLER: A. HE	FFRUN
SAMPLER T	/PF·					INSPECTOR: A.	HEFFRUN
HAMMER WE	IGHT:					DATES	ELEVATION:
STROKE LEI	VGTH:		STA	ART: 7/10/	92	FINISH: SAME	TOTAL DEPTH: 11
PROFILE		SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STRA	ATIGRAPHY
		0.1000000000000000000000000000000000000			7	Red/brown loan	m with pebbles.
				-2		Grey/tan clay.	
				4	-	Slightly clayey	red/brown silt rse sand and fine
				6		gravel.	
				-8			
				10	-		
1.7.7.7.7.	B409-2			12	-	End of Boring	
				-14			
				H6	-		
				-18			
				20	- -		
				-22			
	-			-			
				-24	1		
				-26	-	9	
				-28			WIELDOEDSE
				-30		-	KHOV005936



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	BORING NO	.: B409	-3			LOCATI	ON: Bl. 409	·
	JOB NUMBE	R: 9205	50			PROJEC	T. K HOVNANTAN	
1	DRILLING C	ONTRA	CTOR:	MILLTOWN [DRILL	ING AN	D EXCAVATION	
	DRILLING M	ETHOD	: SOLI	D STEM AUG	SER		DRILLER: A. L	INTAMO
	BIT SIZE/T		" DRA	3			SAMPLER: A. I	
	SAMPLER T						INSPECTOR: A	
	HAMMER WE					DRILLIN	G DATES	ELEVATION:
	STROKE LE	NGTH:		ST		7/10/92		TOTAL DEPTH: 11
	PROFILE	NUMBER	SAMPL REC.		DEP	æ		RATIGRAPHY
では、アマ・ファ					-2		Grey/black lo construction (
					-6		Grey/tan-clay	
		B400 0		1	8 - -10	-	Red/brown cla fragments.	ayey silt with shale
		B409-3			-1 2		End of Boring	
					-14			
				ŀ	-16	-		
			To the house of		1 8	-		
			and a grant of the state of the		-20		_	
				-	-22			
				<u> </u>	-24	-		
					-26			
				-	-28			KHUNUUEUSS
					30	-	80	KH0V005937

BORING LOG

								(Page 1 of 1)			
					LOCA	TION:	Bl. 409				
BORING NO.:	B409-4	1			PPOJE	CT. K	HOVNANIAN				
JOB NUMBER:	92050		TI I TO	TAWAL D	PILLING A	THE AND EXCAVATION					
	MITD ACT	LUK. M	ILL IC	MIN D	ED.	DRILLER: A. UNTAMO					
OPTI I THE ME	THOU:	20F1D	SICI	AUG	<u>En</u>		SAMPLER: A. HE	EFFRON			
BIT SIZE/TY	PE: 4"	DRAG					INSPECTOR: A.	HEFFRON			
SAMPLER TY	PE:					7110 5		ELEVATION:			
HAMMER WEI	GHT:	-					DATES	TOTAL DEPTH: 11			
STROKE LEN	GTH.			STA	ART: 7/10	92	FINISH: SAME	10172			
STHUKE LEN	0111.	2 4 14701				65	STE	RATIGRAPHY			
PROFILE	:	SAMPL	.E.J	to Thi	DEPTH	WATER	311	ATIONATIO			
PROFILE	NUMBER	REC.	BLOWS	10 IN		-		ill minor			
A							Red/brown sil	ty loam with minor			
			1				shale fragmen	nts.			
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Ay Ay Ay	B409-4				Γ		End of Boring	a			
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BORING LOG

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BORING NO		-		LOC	ATION	: Bl. 409	
JOB NUMBE				PRO	JECT:	K. HOVNANIAN	
DRILLING C	ONTRA	CTOR:	MILLTOWN !	DRILLING	AND E	XCAVATION	-
DRILLING M				SER		DRILLER: A. UN	ГАМО
BIT SIZE/T		" DRAG	3			SAMPLER: A. HE	FFRON
SAMPLER T						INSPECTOR: A.	HEFFRON
HAMMER WE				DRIL	LING	DATES	ELEVATION:
STROKE LE	NGTH:		ST	ART: 7/10	/92	FINISH: SAME	TOTAL DEPTH: 11
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER	STRA	TIGRAPHY
				-2	-	Red-brown loan	
1,57,57,57 1,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,7,				-4 -6		Grey/black clay gravel.	ey silt with some
		.co	6. 2	-8		Tan/black fine damp. Some gra	
				10		Red/brown clay	ey, sandy silt.
	B409-5	-		H2		End of Boring	
				- 1 4 -			
				-1 6 -	-		
				-18 -	-		
				- 20	-		
				- 22	_		
				-24	_		
				-26	-		
		to 12 Panels	F	-28	-		
		.		-30			KH0V005939



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	2400			LOCA	TION:	Bl. 409		4		
BORING NO.:	B409-			PRO.IF	CT. K	HOVNANIAN		_;		
JOB NUMBER	SMILD VC	TOP: A	ATLI TOWN D	RILLING A	LING AND EXCAVATION DRILLER: A. UNTAMO					
DRILLING CO	JNINAL	SOL IT	STEM AUG	ER		DRILLER: A. UNT	AMO			
DRILLING MI	ZDE: 4"	DDAG	O TELL TO			SAMPLER: A. HEF	FRON			
BIT SIZE/T	TPE. 4	UNAU				INSPECTOR: A. H	EFFRON			
SAMPLER T	PE:			DRILL	ING D	ATES	ELEVATION:			
HAMMER WE	IGHT:		STA	ART: 7/10		INISH: SAME	TOTAL DEPTH: 11	\dashv		
STROKE LE					1		TTODADLIV			
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER	SIRA	TIGRAPHY	_		
	HOFIDEI		Ι	-		Brown silty loan	with gravel and			
				+	†					
				-2	H	pebbles.				
				+	1-1	Red/brown silt	with gravel and			
12.7.7.7.	3			-4	- 1		Milli g			
11/1/1/1/	3			1	+ 1	pebbles.		-		
11/1/1/1/	3			-6		Black/tan to ta	an/black silty			
4	-				+ 1		,			
a a diga a a diga a a diga a a d diga a a diga a a diga a a diga a	.]			-8	- 1	clay.		-		
	4	1		U		Pod/brown clay	yey silt with shale			
			İ	10			ye, one man			
				H0		fragments.		_		
4 4 4 4	B409-6			1		End of Boring				
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	BORING NO.					LOCA	TION	Bl. 403		
	JOB NUMBE					PROJ	ECT:	K. HOVNANIAN		
	DRILLING C	ONTRA	CTOR:	MILLTOW	N DRIL	LING	AND E	XCAVATION		
	DRILLING M BIT SIZE/T							DRILLER: A. UN	TAMO	
1	SAMPLER T		DHAC)				SAMPLER: A. HE	FFRON	
ł	HAMMER WE					DDTLL	TNIC I	INSPECTOR: T.		
ı	STROKE LEI				START	7/10/	ו פאוד.	FINISH: SAME	ELEVATION:	
		67	SAMPL			T		THOM: SAME	TOTAL DEPTH: 8	
	PROFILE	NUMBER			N DE	PTH	WATER	STRA	TIGRAPHY	
h	V. O. V. O. V		Γ	Γ						
P.	0000				-	-	.	Clayey, silty loa	am with	
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BORING LOG

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		LOCAT	ION:	Bl. 403				
30RING NO.: P409-2		PROJECT: K. HOVNANIAN						
OB NUMBER: 92050	ATLI TOWN DE	ATLI ING A	LITIG AND EXCAVATION					
DRILLING CONTRACTOR: I	MILL TOWN DI	11111111		DRILLER: A. UNT	ramo			
DOTI I THIS METHOD: LEST I)11			SAMPLER: A. HE	FFRON			
BIT SIZE/TYPE: 4" DRAG	·		INSPECTOR: T. BER					
SAMPLER TYPE:		DDTLL	TNG D	ATES	ELEVATION:			
HAMMER WEIGHT:				INISH: SAME	TOTAL DEPTH: 8			
STROKE LENGTH:	STA	RT: 7/10/	92 1	INION. CANA				
SAMPI	FS	DEDTU	WATER	STR	ATIGRAPHY			
PROFILE NUMBER REC.		DEPTH	#					
NUMBER REC.	DEGMO! 0		_	Si silty lo	am with			
V.O.V.O.V.		-	- 1	Clayey, silty lo	all with			
0000		-2	- 1	construction d	ebris. Water at			
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A. 9. A. A. A.			1 1	Bottom of Pit				
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		12	+ 1					
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		H6	-					
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		-18	-	1				
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	9	-28	-					
		-	-		KH0V005942			
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		-28 -28	1 1 1 1 1		KH0V005942			

BORING LOG

J M SORGE INC

(Page 1 of 1) BORING NO .: P403-1 LOCATION: BI. 403 JOB NUMBER: 92050 PROJECT: K. HOVNANIAN DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit DRILLER: A. UNTAMO BIT SIZE/TYPE: 4" DRAG SAMPLER: A. HEFFRON SAMPLER TYPE: INSPECTOR: T. BER HAMMER WEIGHT: DRILLING DATES ELEVATION: STROKE LENGTH: START: 7/8/92 TOTAL DEPTH: 5 FINISH: SAME SAMPLES PROFILE DEPTH STRATIGRAPHY NUMBER REC. BLOWS/8 IN .0.0.0 Fill material. Clayey sand with rocks and debris. Bedrock at S403-1 bottom. Bottom of Pit 8 10 12 14 -16 -18 -20 -22 -24 -26 -28 KH0V005943 -30

BORING LOG

							(rage 1 of "		
	D403-1	<u> </u>		LOCA	TION:	Bl. 403			
BORING NO.: JOB NUMBER	• 92050	-		PROJE	ECT: K	K. HOVNANIAN			
JOB NOWBER	NTRAC	TOR: N	MILLTOWN D	RILLING A	AND E	XCAVATION DRILLER: A. UNT	AMO		
DRILLING ME	THOD:	test p	oit						
BIT SIZE/T	YPE: 4"	DRAG			SAMPLER: A. HEFFRON INSPECTOR: T. BER				
SAMPLER TY	PE:				TNIC		ELEVATION:		
HAMMER WE	IGHT:					DATES FINISH: SAME	TOTAL DEPTH: 7		
STROKE LE	NGTH:		STA	ART: 7/7/					
PROFILE		SAMPL REC.	ES BLOWS/8 IN	DEPTH	MATER		ATIGRAPHY		
000			T			Reddish black I	oamy soil with		
0.00.0	.					cobbles and sh	ale fragments.		
0.000	1			-2		Weathered red	shale at bottom.		
.0 .0 .0	5403-1					Medificionita			
0.0.0.0				1-4					
0.00.00	1			-6					
0.0.0	,			T ⁰					
	1			-8		Bottom of Pit			
			(S)	40			Ĩ		
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BORING NO.	.: P403-	-3			LOCATION: BI. 403				
JOB NUMBE					PROJECT: K. HOVNANIAN				
DRILLING C	ONTRA	CTOR:	MILLTOWN	DRILL	ING	AND	EXCAVATION		
DRILLING M							DRILLER: A. UNTAMO		
BIT SIZE/T		DRAG	3				SAMPLER: A. HEFFRON		
SAMPLER T					0001	7110	INSPECTOR: T. BER		
HAMMER WE							DATES ELEVATION:		
STRUKE LE	T	200 20 00		TART:	1/1/	92	FINISH: SAME TOTAL DEPTH: 7		
PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/8 IN	DEI	PTH	WATER	STRATIGRAPHY		
							Reddish black loam. Weathered		
				-2			red shale at bottom.		
	S403-1								
				4			1		
				6					
							Bottom of Pit		
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BORING LOG

J M SORGE INC

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BORING NO.:	PADA-			LOCA	TION	l: Bl. 404	
				K. HOVNANIAN			
DOE NUMBER	ONTRAC	TOR: I	MILLTOWN	EXCAVATION	TAMO		
DRILLING M	ETHOD:	test p	oit		EEDON		
BIT SIZE/T	YPE: 4"	DRAG				SAMPLER: A. HE	PED
SAMPLER T	YPE:					INSPECTOR: T.	ELEVATION:
HAMMER WE	IGHT:			DRILL	LING	DATES	TOTAL DEPTH: 8
STROKE LE	NGTH:		S	TART: 8/25	/92	FINISH: SAME	TOTAL DEL TIE
PROFILE	Y	SAMPL REC.	ES BLOWS/6 IN	DEPTH	WATER	STR	ATIGRAPHY
VOVOV						Grey/black loa	my soil and
0000	4			-2		construction d	ebris.
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00,000	4						
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00000	9			-6			
N 00 N 00 N				L _o			
0.0.0.0							
A. O. A. A. A	7			-8		Bottom of Pit	
				1.0	ſ	Bottom of	
				10			
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				H4	-		
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				H6	F		
				+	F		
				H8	-		
				-	+		
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				[20			KHOV005946
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J M SORGE INC

(Page 1 of 1) BORING NO.: P404-2 LOCATION: BI. 404 JOB NUMBER: 92050 PROJECT: K. HOVNANIAN DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: test pit DRILLER: A. UNTAMO BIT SIZE/TYPE: 4" DRAG SAMPLER: A. HEFFRON SAMPLER TYPE: INSPECTOR: T. BER HAMMER WEIGHT: DRILLING DATES **ELEVATION:** STROKE LENGTH: START: 8/28/92 FINISH: SAME TOTAL DEPTH: 9 SAMPLES **PROFILE** DEPTH STRATIGRAPHY NUMBER REC. BLOWS/8 IN Grey/black loamy soil and construction debris. Red/brown silty clay. 8 40 Bottom of Pit 12 14 16 18 -20 -22 -24 -26 -28 KH0V005947 -30

BORING LOG

				:-		(rage 1 of t)
			LOCAT	TION:	BI. 405	
BORING NO.:	P405-1		TT. K	HOVNANIAN		
JOB NUMBER	: 92050	MILLTOWN D	ND E	XCAVATION	·	
DRILLING CO	NTRACTOR:	MILL TUNIA D	1	DRILLER: A. UNT	AMO	
DRILLING ME	THOD: test	PIT			SAMPLER: A. HE	FFRON
BIT SIZE/T	YPE: 4" DHA	<u> </u>			INSPECTOR: T.	BER
SAMPLER TY	PE:		DRILL	ING D		ELEVATION:
HAMMER WE	IGHT:		ADT. 8/24	/92 F	INISH: SAME	TOTAL DEPTH: 8
STROKE LEN	IGTH:	31/	1 721	1		
PROFILE	SAMI NUMBER REC		DEPTH	MATER	STRA	ATIGRAPHY
Tra Waste					Red/brown loar	ny soil and
2020		1	t		construction de	ebris.
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X X X X	1		1	-	Bottom of Pit	
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BORING NO.: P405-2	LOCAT	ION: Bl. 405	_
JOB NUMBER: 92050	PROJE	CT: K. HOVNANIAN	-
DRILLING CONTRACTOR: MILLTOWN DRI		_	
DRILLING METHOD: test pit	DRILLER: A. UNTAMO		
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON	
SAMPLER TYPE:		INSPECTOR: T. BER	
HAMMER WEIGHT: STROKE LENGTH: START		NG DATES ELEVATION:	
	: 8/24/8	92 FINISH: SAME TOTAL DEPTH: 8	
PROFILE SAMPLES DE	EPTH	STRATIGRAPHY	
0.000		Pod/brown loamy asil as d	\dashv
	T	Red/brown loamy soil and	1
0.0.0		construction debris.	
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BORING LOG

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			LOCA	ΓΙΟΝ	: Bl. 405	
BORING NO.: P4			K. HOVNANIAN			
JOB NUMBER: 92 DRILLING CONT	2050	MILL TOWN D	EXCAVATION			
DRILLING CONT	RACTUR:	MILLIONIVE	DRILLER: A. UN	ГАМО		
DRILLING METH	OU: test	OIL .	SAMPLER: A. HE	FFRON		
BIT SIZE/TYPE	: 4" DHAC)			INSPECTOR: T.	BER
SAMPLER TYPE	T.		DRILL	ING	DATES	ELEVATION:
HAMMER WEIGH	1:	STA	ART: 8/24	/92	FINISH: SAME	TOTAL DEPTH: 8
STROKE LENGT						
PROFILE NUM	SAMPI ABER REC.		DEPTH	MATER		ATIGRAPHY
000					Red/brown load	my soil and
. 0. 0. 0					construction d	ebris.
0.000			-2		3011011 4011011	**************************************
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BORING LOG

							(Page 1 of 1)
BORING NO	.: B408	-1			LOCA	TIC	ON: Bl. 408
JOB NUMBER: 92050 PRO							T: K. HOVNANIAN
DRILLING C	ONTRA	CTOR:	MILLTOWN [DRILL	ING	ANE	DEXCAVATION
			D STEM AUG	SER			DRILLER: A. UNTAMO
BIT SIZE/T		" DRAG	3				SAMPLER: A. HEFFRON
SAMPLER T							INSPECTOR: ANDREW BER
HAMMER WE							G DATES ELEVATION:
STROKE LE	NGTH:		ST	ART:	7/9/	82	FINISH: SAME TOTAL DEPTH: 6
PROFILE	NUMBER	SAMPL REC.	.ES BLOWS/6 IN	DEP	тн	WATER	STRATIGRAPHY
0.000				-2			Silty loam with construction debris
0 0 0 0				4		-	Yellowish to reddish brown silty sand with fine gravel
	B408-1			-6		-	End of Boring.
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				22 -	ļ	-	
				24 -		-	
				–26 -		-	•
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		(rage 1 of 1)				
7.00.0	LOCATION	I: BI. 408				
BORING NO.: B408-2	PROJECT.	PROJECT: K. HOVNANIAN				
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DR	EXCAVATION					
DRILLING CONTRACTORS DRILLING METHOD: SOLID STEM AUGE	R	DRILLER: A. UNTAMO				
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON				
BIT SIZE/TIPE. 4 BING		INSPECTOR: ANDREW BER DATES ELEVATION:				
SAMPLER TYPE:	DRILLING	DAILO				
HAMMER WEIGHT:	RT: 7/9/92	FINISH: SAME TOTAL DEPTH: 10.5				
STRUKE LENGTH.	DEPTH &	STRATIGRAPHY				
Norda		Reddish-brown silty loam with				
0.000	- [construction debris.				
	-2 -	constituction debris.				
• 0 • 0 • 0						
0.000	-4 F_					
ا م م م	-	Reddish- brown silty sand with				
	-6	gravel and construction debris.				
	+	graver and				
	l-8 -	ž.				
	L L_					
		Reddish-brown clayey silt with				
0.000	HO 1-	shale fragments and rubble.				
B408-2	T					
	H2	Bottom of boring.				
	t t					
	H4 F					
	+ +					
	H6 -					
	+					
	H8 -					
	-					
	-20 -					
	22					
	-22					
	-24					
	-26	-				
	t t					
	-28	KH0V005952				
		KHUAAAAA				
	-30					

BORING LOG

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	BORING NO.	: B408	-3		LC	CATI	ON: Bl. 406	
1	JOB NUMBE	R: 9205	0		PF	ROJEC	T: K. HOVNANIAN	
-						NG AN	DEXCAVATION	
	DRILLING M				ER		DRILLER: A. UN	ITAMO
	BIT SIZE/T		'DRAG	3			SAMPLER: A. H	
į	SAMPLER T						INSPECTOR: A	
	HAMMER WE						G DATES	ELEVATION:
1	STROKE LE	NGTH:		ST	ART: 7/	/9/92	FINISH: SAME	TOTAL DEPTH: 8.5
1	PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPT	HATER	STR	ATIGRAPHY
İ	000			I	İ	<u>i</u>	6211	
-	.0.0.0.0)	† .	-	Silty loam with	construction
	4.4.4.4				-2	 	debris.	9901 48
î				ĺ	<u> </u>	-	Cilty olayou y	ollare beauty and
	La La La La La				-4	-		ellow-brown sand
	14.4.4		1]	-	۲	with fine grave	1.
1	****				-6	-	1.	
ì		B408-3		-	-	<u> </u>	Dark grey/bro	wn silty sand with
1					-8		fine gravel.	
-					_	+		
1					-10	-	End of Boring.	
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1					-12	-		
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BORING LOG

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	- 100			LOCAT	TION:	Bl. 408	
BORING NO .:	B408-	4		PRO.IF	OJECT: K. HOVNANIAN		
JOB NUMBER DRILLING CO	: 82050	TOP: N	ATLI TOWN D	XCAVATION	T 1140		
DRILLING CO	NIRAL	COL ID	STEM AUG	FR		DRILLER: A. UN	TAMO
DRILLING ME	THOU.	DDVC	OTEN ASS.			SAMPLER: A. H	EFFRON
BIT SIZE/T	YPE: 4"	DRAG				INSPECTOR: A	NDREW BER
SAMPLER TY	PE:			DRILL	ING D	ATES	ELEVATION:
HAMMER WE	IGHT:		ST/	ART: 7/9/		FINISH: SAME	TOTAL DEPTH: 11.0
STROKE LEN				1111.7707			
PROFILE	NUMBER	REC.	ES BLOWS/B IN	DEPTH	MATER		RATIGRAPHY
						Dark grey silt	y loam with
0.00.0	1					construction	debris.
				-2		Collection	
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. 0. 0. 0	1			-4	H		
. 0 . 0 . 0				-	-		brown cilty
		1		-6		Brown/yellow	
- Law Law Law Law 1	뎍				FN	gravelly sand	i
10 10 10 10	4			-8	LI		
4 4 4	-			Po		Reddish-bro	wn silty sand with
10 10 10				İ	T I	minor gravel.	
14. 44. 44.	-			H0	T		
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	B408-4			12	- 1	End of Borin	9.
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BORING NO					LOCATION: BI. 406	
JOB NUMBE					PROJECT: K. HOVNANIAN	
DRILLING C	ONTRA	CTOR:	MILLTOWN I	DRIL	LLING AND EXCAVATION	
			D STEM AUG	3ER	DRILLER: A. UNTAMO	
BIT SIZE/T		" DRAC	3		SAMPLER: A. HEFFRON	
SAMPLER T		-			INSPECTOR: ANDREW BER	-
HAMMER WE					DRILLING DATES ELEVATION:	
STROKE LE	NGTH:	-	ST	ART:	T: 7/9/92 FINISH: SAME TOTAL DEPTH: 9.50	-
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEI	EPTH STRATIGRAPHY	
0000				-2	Dark grey silty sand.	
0.0.0			8	4	Grey/brown silty sand with construction debris.	
0.0.0				6	Grey/brown silty, gravelly sand with construction debris.	
	B408-5			-8 -10	Yellow/brown silty, clayey sand with fine gravel.	
		•		-12	Dark brown silty sand with fine	
-				-1 4	End of Boring.	
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8				- -18	F	
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BORING LOG

J M SORGE INC (Page 1 of 1)

LOCATION: BI. 408 BORING NO .: B408-8 PROJECT: K. HOVNANIAN JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLER: A. UNTAMO DRILLING METHOD: SOLID STEM AUGER SAMPLER: A. HEFFRON BIT SIZE/TYPE: 4" DRAG INSPECTOR: ANDREW BER SAMPLER TYPE: **ELEVATION:** DRILLING DATES HAMMER WEIGHT: TOTAL DEPTH: 7.5 FINISH: SAME START: 7/9/92 STROKE LENGTH: STRATIGRAPHY SAMPLES DEPTH PROFILE NUMBER REC. BLOWS/8 IN Grey-brown silty sand with 0.0.0 construction debris. • 0 • 0 • 0 End of Boring. 8 B408-8 40 12 14 -16 48 -20 -22 -24 -26 -28 KH0V005956 -30



BORING NO.					LOCATION: BI. 408				
JOB NUMBE					PRO	EC.	CT: K. HOVNANIAN		
DRILLING C	ONTRAC	CTOR:	MILLTOWN	DRIL	LING	ANI	ND EXCAVATION		
DRILLING M BIT SIZE/T				GER			DRILLER: A. UNTAMO		
SAMPLER T		DNAL	3				SAMPLER: A. HEFFRON		
HAMMER WE					DDII	TAI	INSPECTOR: ANDREW BER NG DATES ELEVATION:		
STROKE LE			ST	ART	: 7/9/				
OTHORE EE	T	CAMO		7	. 1767				
PROFILE	NUMBER	SAMPL REC.	BLOWS/8 IN	DE	PTH	WATER	STRATIGRAPHY		
0.00.00							Grey-brown silty loam with gravel		
. 0 . 0 . 0							and construction debris.		
				[-			and construction depris.		
0.00.0				L					
00000									
F17171717	B408-7			-6			Reddish-brown silty, clayey sand		
	D400-1						with minor gravel.		
				-8			With millor graver.		
							End of Boring.		
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				-30		_	KH0V005957		

BORING LOG

BORING NO.: B408-8 PROJECT: K. HOVNANIAN JOB NUMBER: 82050 DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: SOLID STEM AUGER SAMPLER: A. HEFFRON BIT SIZE/TYPE: 4" DRAG SAMPLER TYPE: HAMMER WEIGHT: STROKE LENGTH: PROFILE NUMBER REC. BLONS/8 IN PROFILE OF 10 O O O O O O O O O O O O O O O O O O			() dge () (
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: SOLID STEM AUGER DRILLER: A. HEFFRON SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON STIZE/TYPE: 4" DRAG INSPECTOR: ANDREW BER SAMPLER TYPE:	D 400 P	LOCATION:	BI. 406				
DRILLING CONTRACTOR: MILL TOWN DUEST DRILLING METHOD: SOLID STEM AUGER SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON SAMPLER: A. HEFFRON INSPECTOR: ANDREW BER BELEVATION: TOTAL DEPTH: 10.5 STROKE LENGTH: SAMPLES PROFILE SAMPLES NUMBER REC. BLOWS/Ø IN PROFILE OF THE SAMPLES NUMBER REC. BLOWS/Ø IN A CONSTRUCTION DEPTH STROKE LENGTH: STROKE LENGTH: SAMPLES NUMBER REC. BLOWS/Ø IN A CONSTRUCTION DEPTH STROKE LENGTH:	BORING NO.: 8406-6	PROJECT: K	PROJECT: K HOVNANIAN				
DRILLING METHOL: SUID STEP ADDED BIT SIZE/TYPE: 4" DRAG INSPECTOR: ANDREW BER	FEET THE CONTRACTOR: MILLIONN DIV	XCAVATION LINTAMO					
BIT SIZE/TYPE: 4" DRAG SAMPLER TYPE: DRILLING DATES STROKE LENGTH: STROKE LENGTH: SAMPLES PROFILE NUMBER REC. BLOWS/6 IN PROFILE OF 10 O O O O O O O O O O O O O O O O O O	DRILLING CONTINUES SOLID STEM AUGER		DRILLER: A. UNITAMO				
SAMPLER TYPE: HAMMER WEIGHT: STROKE LENGTH: SAMPLES PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE STRATIGRAPHY Yellowish-brown loam with construction debris. Grey-brown to reddish-brown silty, clayey sand with const. debris. PROFILE PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE STRATIGRAPHY Yellowish-brown loam with construction debris. From Province From Province Province PROFILE TOTAL DEPTH: 10.5 TOTAL DEPTH: 10.	DIT SIZE / TYPE: 4" DRAG	N.	SAMPLER. A. HELT KON				
HAMMER WEIGHT: STROKE LENGTH: SAMPLES NUMBER REC. BLOWS/6 IN PROFILE SAMPLES NUMBER REC. BLOWS/6 IN PROFILE SAMPLES NUMBER REC. BLOWS/6 IN PROFILE SAMPLES NUMBER REC. BLOWS/6 IN PROFILE SAMPLES NUMBER REC. BLOWS/6 IN PROFILE STRATIGRAPHY Yellowish-brown loam with construction debris. Grey-brown to reddish-brown silty, clayey sand with const. debris. PROFILE PROFILE SAMPLES NUMBER REC. BLOWS/6 IN PROFILE STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY Yellowish-brown loam with construction debris. From Profile STRATIGRAPHY	CAMPLED TYPE:						
STROKE LENGTH: SAMPLES NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE STRATIGRAPHY Yellowish—brown loam with construction debris. PROFILE PROFILE NUMBER REC. BLONS/8 IN PROFILE NUMBER REC. BLONS/8 IN PROFILE PROFILE STRATIGRAPHY Yellowish—brown loam with construction debris. PROFILE PROFILE PROFILE NUMBER REC. BLONS/8 IN PROFILE PROFILE STRATIGRAPHY Yellowish—brown loam with construction debris. PROFILE PROFILE PROFILE PROFILE NUMBER REC. BLONS/8 IN PROFILE PR	- VETOLIT		A 1 L 0 F				
PROFILE NUMBER REC. BLOWS/8 IN PROFILE NUMBER REC. BLOWS/8 IN	STAR	T: 7/9/92	INISH. SAME				
Yellowish—brown loam with construction debris. Yellowish—brown loam with construction debris. Yellowish—brown loam with construction debris. Grey—brown to reddish—brown silty, clayey sand with const. debris. Bauer and a series of the se	SAMPLES	DEPTH \$					
-2 construction debris. -2 construction debris. -2 construction debris. -2 construction debris. -4 construction debris.			Yellowish-brown loam with				
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000						
0	1.0.0.0	-2 [Collect de tier.				
8 - 6 - 8 - silty, clayey sand with const. debris. -8	1.0.00						
0	0.00.0	4	Grey-brown to reddish-brown				
0	0.000	·	ally playey sand with const.				
-8		-6 -					
B408-8 -10 -12 -14 -16 -18 -20 -24 -26	10.00.00	·	debris.				
-121416202224262626	0.0.0	-8 F I					
-12 -14 -16 -20 -22 -24 -26 -26 -26	0.000						
-12 -14 -16 -18 -20 -22 -24 -26 -26 -26 -26		HO - 1					
-14 -16 -18 -20 -22 -24 -26	* 0 * 0 * 0 B408-8	-	End of Boring.				
-14 -16 -18 -20 -22 -24 -26		H2 - 1	End of Division				
-16 -18 -20 -22 -24 -26		1 - 1					
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BORING NO.: B406-9						LOCATION: BI. 408					
JOB NUMBE		PROJECT: K. HOVNANIAN									
					LING	ING AND EXCAVATION					
DRILLING M				GER				DRILLER:			
BIT SIZE/T		'DRA	3					SAMPLER:			
SAMPLER T										DREW BER	
HAMMER WE								res		ELEVATION:	
STROKE LE	NGTH:		ST	ART:	7/10	/92	FIN	VISH: SAM	1E	TOTAL DEPTH: 11.0	
PROFILE	E SAMPLES NUMBER REC. BLOWS/			DE	РТН	WATER			STRA	TIGRAPHY	
				-2			BI	ack coa	l ash	and loam.	
				4		-	Re	ed/browi	n grav	relly silt.	
				-6							
				-8		-	Sc	oft reddi	sh sha	ale.	
	B408-9			10				- 1 (0			
				12			E	nd of Bo	ring.		
				H4							
				- 16							
				18							
				-20		-					
				-22		-					
				-24		-					
				-26		-					
				-28		-					
				30						KHOV005959	



BORING NO.:	P407-1					N: BI. 403			
LOD AN MADE	K. HOVNANIAN								
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLER: A. UNTAMO									
DRILLING ME	ETHOD:	test p	olt			SAMPLER: A. HEFFRON			
BIT SIZE/T		DRAG				INSPECTOR: T. BER			
SAMPLER TY				DOTLI	TNIC				
HAMMER WE	IGHT:					FINISH: SAME ELEVATION: TOTAL DEPTH: 10			
STROKE LE	NGTH:		51	ART: 7/9/		FINISH. SAPIL TOTAL DEL TIME			
PROFILE	NUMBER	REC.	BLOWS/8 IN	DEPTH	MATER	STRATIGRAPHY			
* * * * * * * * * * * * * * * * * * * *					L	Dark yellow/light brown sandy			
						loam.			
***				-2		louii.			
77.77						Light brown silty loam.			
X X				T-4		2.9			
						Weathered red shale with sandy			
THEFT				-6	ΓΙ	silt.			
TOTAL TRANSPORT						Sit.			
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AND THE PROPERTY.				10		Bottom of Pit			
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				-	-				
				-24	-				
					+				
				-26	-				
				-	-				
*				-28	-				
					-	KH0V005960			
				-30	-	KHUNNOgayo			



BORING NO.				L	OCATIO	N: Bl. 408		
JOB NUMBER				PF	ROJECT	: K. HOVNANIAN		
				DRILLI	NG AND	EXCAVATION		
DRILLING M						DRILLER: A. U	NTAMO	
BIT SIZE/T		DRAG	3			SAMPLER: A. H	HEFFRON	
SAMPLER T						INSPECTOR: 7	. BER	
HAMMER WE				DF	RILLING	DATES	ELEVATION:	
STROKE LE	NGTH:		ST.	ART: 7,	/8/92	FINISH: SAME	TOTAL DEPTH: 8	
PROFILE	1	SAMPL REC.	ES BLOWS/8 IN	DEPT	HATER	STI	RATIGRAPHY	
V-0-V-0-V-	1		T	 				
0,000				-	- 1	Fill material.	Clayey unsorted	
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BORING LOG

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	D400 /			LOCA	TION	: Bl. 408				
BORING NO.:				PROJE	PROJECT: K. HOVNANIAN					
JOB NUMBER	NTDAC	TOR: N	ATLL TOWN D	RILLING A	LING AND EXCAVATION					
DRILLING CONTRACTOR: PIECE DRILLING METHOD: test pit					DRILLER: A. UNTAMO					
BIT SIZE/T	YPF: 4"	DRAG				SAMPLER: A. H	DEP			
SAMPLER TY	PE:					INSPECTOR: T	ELEVATION:			
HAMMER WE	IGHT:					DATES FINISH: SAME	TOTAL DEPTH: 8			
STROKE LE	VGTH:		STA	ART: 7/8/		FINISH: SAME	TOTAL DEFINITION			
SAMPLES		.ES	DEPTH	MATER	STI	RATIGRAPHY				
PROFILE	NUMBER			DELLI	A					
11.0.120.V						Fill material.	Clayey unsorted			
0000	1					sand and deb	oris.			
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00,000	9									
N. D. N. D. N				 8		Bottom of Pi	t			
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				-	+					
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				+	+					
				14	-					
				-	+					
				-16	-					
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BORING NO.: P408-3	LOCATION:								
JOB NUMBER: 92050		. HOVNANIAN							
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION									
DRILLING METHOD: test pit		DRILLER: A. UNTAMO							
BIT SIZE/TYPE: 4" DRAG		SAMPLER: A. HEFFRON							
SAMPLER TYPE:		INSPECTOR: T. BER							
HAMMER WEIGHT:	DRILLING DA	ATES ELEVATION:							
STROKE LENGTH:	START: 7/8/92 F	INISH: SAME TOTAL DEPTH: 9							
PROFILE NUMBER REC. BLOWS	DEPTH	STRATIGRAPHY							
		Fill material. Clayey unsorted sand and debris.							
0.0000	6 -	Coal ash and burnt wood.							
0.0.0.0		Red/brown silty clay with cobbles, gravel, and sand.							
	HO A	Bottom of Pit							
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	H6 -								
	-1 8 -								
	-20 [-								
	-22								
	-24								
	26								
	28								
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BORING LOG

	(rage) c. v						
BORING NO.: P408-4	LOCATION: BI. 408						
JOB NUMBER: 92050	PROJECT: K. HOVNANIAN	ROJECT: K. HOVNANIAN					
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN	DRILLING AND EXCAVATION DRILLER: A. UNTAMO						
DRILLING METHOD: test pit	SAMPLER: A. HEFFRON						
BIT SIZE/TYPE: 4" DRAG	INSPECTOR: T. BER						
SAMPLER TYPE:							
LILLANGED WEIGHT.	DRILLING DATES						
STROKE LENGTH:	IART. 170782 12120.11						
PROFILE NUMBER REC. BLOWS/8 I	DEPTH STRATIGRAPHY						
Vica Vica Vic	Fill material. Clayey unsorted						
0000	sand and debris.						
0.0.0	Red/brown silty sand with						
0.0.00	cobbles, and pebbles.						
0.0.0.0	6 -						
0.0000	8 -						
0.0.0.0 	10	_					
7	Bottom of Pit						
0 0	12 -						
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	-28 -						
	-28 KH0V005964						



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BORING NO.	: P408-	-5_		LOC	ATI	ON:	Bl. 408	
JOB NUMBER: 92050 PROJ							. HOVNANIAN	
DRILLING C	ONTRA	CTOR:	MILLTOWN (DRILLING	AN	DE	XCAVATION	
DRILLING M							DRILLER: A. UNT	ГАМО
BIT SIZE/T		" DRAG	3				SAMPLER: A. HE	FFRON
SAMPLER T	YPE:						INSPECTOR: T. I	BER
HAMMER WE	IGHT:			DRIL	LIN	G D	ATES	ELEVATION:
STROKE LE	NGTH:		ST	ART: 7/8,	/92	F	INISH: SAME	TOTAL DEPTH: 10
PROFILE	NUMBER	SAMPL REC.	ES BLOWS/8 IN	DEPTH	WATER		STRA	TIGRAPHY
	S408-15			-2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28		E of V and	soil, layered wit paving. Fill material. Clasand and debris Bluish, stained o	
				-30	-		er.	KH0V005965

BORING LOG

		(Page 1 of I)				
	LOCATION: Bl. 408					
BORING NO.: P408-6 JOB NUMBER: 92050	PROJECT: K. HOVNANIAN					
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DR	ILLING AND EXCAV	ATION				
DRILLING METHOD: test pit						
BIT SIZE/TYPE: 4" DRAG	SAI	MPLER: A. HEFFRON				
SAMPLER TYPE:		SPECTOR: T. BER				
HAMMED WEIGHT.	DRILLING DATES	ELEVATION: TOTAL DEPTH: 7				
STROKE LENGTH: STAF	T: 7/8/92 FINIS	SH: SAME TOTAL DEPTH: 7				
	DEPTH 🕌	STRATIGRAPHY				
	Fill	material. Coal ash and loamy				
		layered with remnant asphalt				
0.000	- 1 1	8. 1000				
	pav	ing.				
0.0.0.0	-4 Fill	material. Clayey unsorted				
. 0 . 0 . 0	1 222	d and debris.				
1.0.00	-6 - Sain	d alla debito.				
10.00.00	Pari	ttom of Pit				
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y .	1					
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	-28					
	+ + 1	KH0V005966				
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								CATION: Bl. 408					
JOB NUMBE					PI	ROJ	ECT: F	. HOVNANIAN	I			_	
DRILLING C	ONTRA	CTOR:	MILLT	OWN D	RILLI	NG A	AND E	XCAVATION					
DRILLING M				M AUGI	ER			DRILLER: A.	UNT	AMO			
BIT SIZE/		" DRA	G					SAMPLER: A	. HEF	FRON		-	
SAMPLER T								INSPECTOR				-	
HAMMER WE		19			DF	RILL	ING D	ATES		ELEVATION:		-	
STROKE LE	NGTH:			STA				INISH: SAME		TOTAL DEPT		-	
PROFILE	NUMBER	SAMPI REC.	ES BLOWS		DEPT		WATER			TIGRAPHY			
					to in	-		Black/grey	clay	ey fine san	d.		
				-	-2	+	-						
	408-11A			+	ì	-							
	1			-	-4	-	-						
				F		F							
	408-193			-	-6								
1/1/1/				L		L		Red/brown f	ine i	velo vhas	with		
					-8	L		ine gravel	Mat	or of 10 15	MILLI		
191919				L	U			ine gravel.	Mal	er at 12-15	It.		
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171719				F	14	F						To delivery	
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	(Page 1010
	LOCATION: Bl. 408
BORING NO.: B408-12	PROJECT: K. HOVNANIAN
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DR	THOUSENT THE AND EXCAVATION
ESTATIO CONTRACTOR MILLIUMIN DI	B DRILLER: A. UNTAMO
DOTILING METHOD: SULLU STEM ADDE	SAMPLER: A. HEFFRON
BIT SIZE/TYPE: 4" DRAG	INSPECTOR: A. HEFFRON
SAMPLER TYPE:	IELEVATION:
HAMMER WEIGHT:	DRILLING DATES ART: 8/24/92 FINISH: SAME TOTAL DEPTH: 5.5
STROKE LENGTH: STA	
	DEPTH STRATIGRAPHY
	Concrete, asphalt paving.
	Unsorted sand with gravel and
408-12A	debris.
	Reddish/brown sandy clay.
408-128	6 End of Boring
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BORING NO	.: B408	-13		L	OCATIO	N: Bl. 408		
JOB NUMBE						K. HOVNANIAN		
DRILLING C	ONTRA	CTOR:	MILLTOWN	DRILLI	NG AND	EXCAVATION		
DRILLING M	ETHOD	SOLI	D STEM AU	GER		DRILLER: A. UN	TAMO	
BIT SIZE/1					***************************************	SAMPLER: A. HE		
SAMPLER T	YPE:					INSPECTOR: A.	HEEERON	
HAMMER WE				DI	RILLING	DATES	ELEVATION:	
STROKE LE	NGTH:		ST			FINISH: SAME	TOTAL DEPTH: 5.5	7
		SAMPL					1 10 1AL DEI 111. 5.5	
PROFILE	NUMBER		BLOWS/8 IN	DEPT	TH MATER	STR	ATIGRAPHY	
Mark chart market and						0		
	ł		1	t	1	Concrete.		
	408-13A			-2	$\vdash \bigvee$	Black /brown or	0.00	•
	400 ISA			ł	+ h	Black/brown-co	darse sand and	
				-4	+1	gravel.		
				-	+ 1	Dark brown /rea	l alan 111	e .
	408-13B			6	17		clay with some	
				-	1	sand.		
			ĸ	-8		End of Doring		
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BORING LOG

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	D 400 -1	À		LOCA	TION:	Bl. 408				
BORING NO.: B408-14						PROJECT: K. HOVNANIAN				
JOB NUMBER	SALTRAC	TOR: N	ITLI TOWN D	RILLING A	AND E	XCAVATION	- · · · · · · · · · · · · · · · · · · ·			
DRILLING CO	THOR	SOL ID	STEM AUG	ER.		DRILLER: A. UN	FEDON			
BIT SIZE/T	VDE: 4"	DRAG	0.0			SAMPLER: A. HE	FFRUN			
BIT SIZE/I	IPE. 4	DITAG			INSPECTOR: A. HEFFRON					
SAMPLER TY	PE:			DRILL	ING	ATES	ELEVATION: TOTAL DEPTH: 5.5			
HAMMER WE	ICTU:		STA	ART: 8/24	/82	FINISH: SAME	TOTAL DEPTH. 3.5			
STROKE LEN	10111.	SAMPL			MATER		ATIGRAPHY			
PROFILE			BLOWS/8 IN	DEPTH	MA.					
et College						Concrete.				
				-2	+	Red/brown sar	ndy clay.			
	408-14A			†	1					
				-4	 					
	3		1	+	1-					
	408-148			-6	- 1	End of Boring	*			
				+	+					
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	BORING NO				LC	CATI	ON: Bl. 408		
	JOB NUMBER: 92050 PROJECT: K. HOVNANIAN								
	DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION								
	DRILLING METHOD: SOLID STEM AUGER BIT SIZE/TYPE: 4" DRAG SAMPLER: A. UNTAMO SAMPLER: A. HEEERON								
	SAMPLER T		DHA	6			SAMPLER: A. H	EFFRON	
	HAMMER WE				00	TI 1 74 1	INSPECTOR: A		
Ì	STROKE LE			ST			G DATES FINISH: SAME	ELEVATION:	
-			CAMPI		1		FINISH: SAME	TOTAL DEPTH: 11	
	PROFILE	NUMBER	SAMPI		DEPT	HATER	STE	RATIGRAPHY	
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Î	10 10 10 10				-		Brown gravelly	loam	\neg
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	D409-	21		LOCAT	ION:	Bl. 408		
BORING NO.:	9406-4			PROJE	PROJECT: K. HOVNANIAN			
JOB NUMBER: 92050 DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLER: A. UNTAMO								
DRILLING M	ETHOD	SOLID	STEM AUG	ER		DRILLER: A. UNTAMO SAMPLER: A. HEFFRON		
BIT SIZE/T	YPF. 4"	DRAG				INSPECTOR: A. HEFFRON		
SAMPLER T	(PF·							
HAMMER WE	TGHT:					DATES ELEVATION: FINISH: SAME TOTAL DEPTH: 11		
STROKE LE	NGTH:		ST	ART: 7/10/	92 1	FINISH, SAME		
STHORE LL		SAMPL	FS	DEDTIL	WATER	STRATIGRAPHY		
PROFILE	NUMBER		BLOWS/8 IN	DEPTH	¥ ¥			
1110	MUMBER	1120.				Dark brown gravelly loam.		
5355				-	1	Dark brown graveny ream		
	7			-2	- 1			
]			-	-	-		
	3			4	-			
	1			-	+ 1			
	1			-6	-	Can condu clay		
THE PROPERTY OF	7				1	Black/tan very fine sandy clay.		
	7		•	-8		w w holo		
	\exists				11	Red/brown clayey silt with shale		
	:			[40		fragments and gravel.		
	•			10		Tr Cg		
	B408-2	1		1		End of Boring		
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BORING NO					LOCATION: BI. 408				
JOB NUMBE			MILLTOWN	DDTI L	ROJECT	K. HOVNANIAN			
DRILLING CONTRACTOR: MILLTOWN DRILLING AND EXCAVATION DRILLING METHOD: SOLID STEM AUGER DRILLER: A. UNTAMO									
BIT SIZE/				JEN					
SAMPLER T		SAMPLER: A. HE	-FFRON						
HAMMER WE				D	RILLING	INSPECTOR: A.			
STROKE LE			ST			FINISH: SAME	ELEVATION:		
	T	SAMPI		T	TT	TINION, SAME	TOTAL DEPTH: 11		
PROFILE	NUMBER		BLOWS/8 IN	DEP	TH #	STR	ATIGRAPHY		
.0.0.0				-	-	Dark brown gra	velly loam and		
0.00.00				-2	- 1	coal ash with c	onstruction		
0.000				-	+ 1	debris.			
				4	- 1				
. 0. 0. 0				ŀ	+ 1				
.0.0.0				-6	- 1	ti	· ·		
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	1	1	L	-2n			KH0V005973		

5

BORING LOG

						ii ago i o i i		
	D408-23		LOCAT	TION:	Bl. 408			
BORING NO.:	B408-23		PRO IF	PROJECT: K. HOVNANIAN				
JOB NUMBER	NITRACTOR: N	AILLTOWN D	RILLING A	ND E	XCAVATION	AMO		
DRILLING CO	THOD: SOLID	STEM AUGI	ER	DRILLER: A. UNTAMO				
DIT CIZE (T)	PE: 4" DRAG			SAMPLER: A. HEFFRON INSPECTOR: A. HEFFRON				
SAMPLER TY	PF.					ELEVATION:		
HAMMER WEI	CHT.				ATES	TOTAL DEPTH: 11		
STROKE LEN	IGTH:	STA	ART: 7/10/	92 F	INISH: SAME	TOTAL DEL TIL		
STRUKE LEI	SAMPL	FS	DEDTU	HATER	STRA	ATIGRAPHY		
PROFILE	NUMBER REC.	BLOWS/8 IN	DEPTH	MA	<u> </u>			
		T			Red/brown gra	velly loam with		
. 0 · 0 · 0			-		construction de	ebris.		
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. 0 . 0 . 0			†	1	(Martin 1)			
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0.000	1		-	1				
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11/1/1/1/	3		10	+1				
11/1/1/1/	3		1	1-				
7. 1. 1. 1. 1. 1. 1	B408-23		12	- 1	End of Boring			
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			-30	L	S.C. series	N110 V 0 0 0 3 1 4		
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									ă.
							: Bl. 408		
JOB NUMBE					PROJ	ECT:	K. HOVNANIAN		
DRILLING C	CONTRA	CTOR:	MILLTOWN I	DRILL	ING	AND	EXCAVATION		-
DRILLING M				GER			DRILLER: A. UN	TAMO	
BIT SIZE/T		' DRAG	3				SAMPLER: A. HE	FFRON	
SAMPLER T	at the common to						INSPECTOR: A.	HEFFRON	
HAMMER WE					RILL	ING	DATES	ELEVATION:	
STROKE LE	NGTH:		ST	ART:	7/10.	/92	FINISH: SAME	TOTAL DEPTH: 11	
PROFILE	NUMBER	SAMPL REC.		DEP	тн	MATER	STRA	TIGRAPHY	
0.0.0							Prown loam with	and all and	
0 0 0							Brown loam with		
2,5,5,5,5			-	-2		1	construction de	ebris.	
				4		-	Red/brown grav	elly silt.	_
	i			-6		-			
14 14 14 14 1			8	-8		•			
		-10	}		Light-brown fine	e sandy, silty			
1.7.7.7.7.	D400 04				- clay.				
	B408-24			-12		-	End of Boring		-
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APPENDIX B LABORATORY ANALYTICAL REPORTS

Checkel in 4/6/87 SEP 6 1989

ENVIROTECH RESEARCH, INC.

102

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 5, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5650 - Hov Site C

Dear Mr. McGowan:

Enclosed are the results you requested for the following samples taken 8/18/89 at Hov Site C:

Lab No.	Client ID	Analysis Requested
27830	T88-WIL	PHC
27831	T88-WIL-1 (m/4)	PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/5/89 Job No.: 5650 - Hov Site C N.J. Certified Lab No. 12543 QA Batch 1451

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	mg/kg	Hydrocarbons (Dry Wt.)
27830	T88-WIL	81.9		36
21030		86.1	63 <u>00000</u> 0	85
27831	T88-WIL-1	80.1		

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 11, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5649 - Hov Site E

Dear Mr. McGowan:

Enclosed are the results you requested for the following samples taken 8/18/89 at Hov Site E:

Lab No.	Client ID	Analysis Requested
27827 ·	B405-1	Priority Pollutant +40 w/CN and Phenols
27828 27829	B404-4 B404-3	PHC PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1382

VOLATILE ORGANICS

Parameter <u>Un</u>	Lab No. 27827 Client ID: B405-1 86.9% Solid its: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
Benzene Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane 2-Chloroethylvinyl ethe Chloroform Chloromethane Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethene trans-1,2-Dichloropropane cis-1,3-Dichloropropen trans-1,3-Dichloropropen trans-1,3-Dichloroprope Ethyl benzene Methylene chloride 1,1,2,2-Tetrachloroeth Tetrachloroethene Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichlorofluoromethane	ND ND ND ND ND ND ND ND ND ND ND ND ND N	25 25 25 25 25 25 25 25 25 25 25 25 25 2

Client:	Samo	
Client Sample Identification:	Sorge RILOT-1	
Sample No.: 27827 QA Batch No.:		
	02 000 No 504	
TENTATIVELY IDE	NTIFIED COMPOUNDS	
Fraction: VIAC	Ongontentian Walle	
	oncentration units: PPM PPB	
COMPOUND NAME	Retention Estima Time Conc	
	(hu)	===:
1. NO VOLATILE ORGANIC COMPO	DUNDS FOUND	
2		
3		
4		1
5		
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7 8.		
9.		
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11		!
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20		-
21		_
22		_
23		_
24		_
25	KH0V005981	

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

ACID EXTRACTABLES

Lab No. 27827 Client ID: B405-1 Detection Limit 86.9% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 330 ND 330 2-Chlorophenol ND 330 2-Nitrophenol ND 330 Phenol ND 2,4-Dimethylphenol 330 ND . 330 2,4-Dichlorophenol ND 2,4,6-Trichlorophenol 330 ND 4-Chloro-3-methylphenol 1700 ND 2,4-Dinitrophenol 1700 ND 2-Methyl-4,6-dinitrophenol 1700 ND Pentachlorophenol 1700 ND 4-Nitrophenol .

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Diethylphthalate

Hexachlorobenzene

N-Nitrosodiphenylamine

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

BASE/NEUTRAL EXTRACTABLES

Lab No. 27827

Client ID: B405-1 86.9% Solid Detection Limit Parameter Units: ug/kg (Dry Weight) Units: ug/kg 1,3-Dichlorobenzene ND 330 1,4-Dichlorobenzene ND 330 Hexachloroethane ND 330 Bis(2-chloroethyl) ether ND 330 1,2-Dichlorobenzene ND 330 Bis(2-chloroisopropyl) ether ND 330 N-Nitrosodi-n-propylamine ND 330 Nitrobenzene ND 330 Hexachlorobutadiene ND 330 1,2,4-Trichlorobenzene ND 330 Isophorone ND 330 Naphthalene ND 330 Bis(2-chloroethoxy) methane ND 330 Hexachlorocyclopentadiene ND 330 2-Chloronaphthalene ND 330 Acenaphthylene 10J 330 Acenaphthene ND 330 Dimethyl phthalate ND 330 2,6-Dinitrotoluene ND 330 Fluorene ND 330 4-Chlorophenyl phenyl ether ND 330 2,4-Dinitrotoluene ND 330

ND

ND

ND

330

330

330

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249C

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter 4-Bromophenyl phenyl ether Phenanthrene Anthracene Dibutyl phthalate Fluoranthene Pyrene Benzidine Butyl benzyl phthalate Bis(2-ethylhexyl) phthalate	Lab No. 27827 Client ID: B405-1 86.9% Solid its: ug/kg (Dry Weight) ND 110J 20J ND 190J 150J ND ND ND 1800 96J	Detection Limit Units: ug/kg 330 330 330 330 330 330 660 330 330 33
Benzo(a)anthracene 3,3'-Dichlorobenzidine Di-n-octyl phthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-c,d)pyrene Dibenzo(a,h)anthracene Benzo(ghi)perylene N-Nitrosodimethylamine	ND ND 160J ND 93J 63J 20J 55J ND	660 330 330 330 330 330 330 330 330

Client: J.M. SORGE			
Client Sample Identification: B 405-1			
Sample No.: 27827 QA Batch No.: 1249 Job No.: 5649			
TENTATIVELY IDENTIFIED COMPOUNT Fraction: BNA			
Concentration Un	nits: PPM	PPB	
COMPOUND NAME	Retention Time	Estimated Conc.	
1. NO SEMI-VOLATILE ORGANICS FOUND			
2			
4,			
J			
6			
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11			
12			
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14			
15			
16			
17			
18			
19			
20			
21			
23			
24			
25	KH	OV005985	

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/11/89 Job No.: 5649 - Hov Site E N.J. Certified Lab No. 12543 QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 27827 Client ID: B405-1 Detection Limit 86.9% Solid Units: uq/kg Units: ug/kg (Dry Weight) Parameter 16 ND 16 Aldrin ND 16 alpha-BHC ND 16 beta-BHC ND 16 delta-BHC ND gamma-BHC (Lindane) 160 ND 32 Chlordane ND 32 4,4'-DDD ND 32 4,4'-DDE ND 32 4,4'-DDT ND 32 Dieldrin ND 32 Endosulfan I ND 32 Endosulfan II ND. Endosulfan sulfate 32 ND 32 Endrin ND 16 Endrin aldehyde ND 16 Heptachlor ND Heptachlor epoxide 320 ND 200 Toxaphene ND 200 PCB-1016 ND 200 PCB-1221 ND 200 PCB-1232 ND 200 PCB-1242 ND 200 PCB-1248 ND 200 PCB-1254 ND PCB-1260

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27827 Client ID: B405-1

Parameter Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	Client ID: B405-1 86.9% Solid Units: mg/kg (Dry Weight) ND ND ND ND 28.9 14 39 ND 22 ND ND ND 49.5	Detection Limit Units: mg/kg 1.0 1.0 1.0 1.0 2.0 5.0 10 0.1 8.0 1.0 2.0 1.0 4.0	Method Code F F P P P P CV P F P F P
Cyanide Phenols	ND ND	1.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Michael McGowan

Report Date: 9/11/89
Job No.: 5649 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1457

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	Petroleum Hydrocarbons <pre>% Solid mg/kg (Dry Wt.)</pre>
27828	B404-4	90.3 ND
27829	B404-2	84.8 ND
21029		

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

101

777 New Durham Road Edison, New Jersey 08817 Tel: (201) 549-3900 Fax: (201) 549-3679

September 6, 1989

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Re: Job No. 5621 - Hov Site E

Dear Mr. McGowan:

Enclosed are the results you requested for the following samples taken 8/15 & 17/89 at Hov Site E:

Lab No.	Client ID	Analysis Requested
27647 27648 27649 27650 27651 27652	T143-1 (406) T259AC-1 (404) T206N (406) T134-VL T134-WM B404-2	PHC PHC PHC PHC PHC PHC PHC Priority Pollutant +40 w/PHC

Please call me at 549-3900 if you have any questions.

Very truly/yours,

Michael J. Urban Laboratory Manager

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1454

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
07547	т143-1	89.3	ND
27647	T259AC-1	88.6	42
27648		88.1	ND
27649	T206N		ND
27650	T134-VL	90.3	ND
0 - 1000	T134-WM	78.6	ND
27651		85.3	1170
27652	B404-2	03.0	

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Michael McGowan

Report Date: 9/6/89

Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543

QA Batch 1382

VOLATILE ORGANICS

Lab No. 27652 Client ID: B404-2

Parameter	85.3% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: ug/kg</u>
Benzene Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethylvinyl eth Chloroform Chloromethane Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethene trans-1,2-Dichloroproper trans-1,3-Dichloroproper trans-1,3-Dichloroproper trans-1,3-Dichloroproper trans-1,3-Dichloroproper trans-1,3-Dichloroproper trans-1,1-Trichloroethene Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene Trichlorofluoromethane Trichlorofluoromethane Vinyl chloride	Units: ug/kg (Dry Weight) ND ND ND ND ND ND ND ND ND ND ND ND ND	
Xylenes (Total)	ND ND	50 25

Client: J. M. Sorge		
Client:		
Client:	51.7	1
Sample No.: 27652 QA Batch No.: \382 Job No	.:562	
TENTATIVELY IDENTIFIED COMPOUND	S	222
Fraction: VOC Concentration Uni	1.	PPB
		Estimated Conc.
COMPOUND NAME	Time =======	:========
1. NO VOLATILE ORGANIC COMPOUNDS FOUND		
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3		
4		
5		
6		
7		
8	.1	
9	1	.
10	- 1	.
11	-1	.
12	_	
13	_	
14	_	
15		
16	_1	_
17	_1	_
18	_1	
19	_	_
20	_	_
21	_	_
22		
23		KH0V005992
24		_

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

4-Nitrophenol .

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

ACID EXTRACTABLES

Lab No. 27652 Client ID: B404-2 85.3% Solid Detection Limit Parameter Units: ug/kg (Dry Weight) -Units: ug/kg 2-Chlorophenol ND 1600 2-Nitrophenol ND 1600 Phenol ND 1600 2,4-Dimethylphenol ND 1600 2,4-Dichlorophenol ND 1600 2,4,6-Trichlorophenol ND 1600 4-Chloro-3-methylphenol ND 1600 2,4-Dinitrophenol ND 8300 2-Methyl-4,6-dinitrophenol ND 8300 Pentachlorophenol ND 8300

ND

8300

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

3:5

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

BASE/NEUTRAL EXTRACTABLES

Lab No. 27652 Client ID: B404-2 Detection Limit 85.3% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 1600 ND 1,3-Dichlorobenzene 1600 ND 1,4-Dichlorobenzene 1600 ND Hexachloroethane 1600 ND Bis(2-chloroethyl) ether 1600 ND 1,2-Dichlorobenzene 1600 ND. Bis(2-chloroisopropy1) ether 1600 ND N-Nitrosodi-n-propylamine 1600 ND 1600 Nitrobenzene ND Hexachlorobutadiene 1600 ND 1,2,4-Trichlorobenzene 1600 ND 1600 Isophorone 200J 1600 Naphthalene ND Bis(2-chloroethoxy) methane 1600 ND Hexachlorocyclopentadiene 1600 ND 2-Chloronaphthalene 1600 750J 1600 Acenaphthylene 460J 1600 Acenaphthene ND Dimethyl phthalate 1600 ND 1600 2,6-Dinitrotoluene 540J 1600 Fluorene ND 4-Chlorophenyl phenyl ether 1600 ND 2,4-Dinitrotoluene 1600 ND 1600 Diethylphthalate ND N-Nitrosodiphenylamine 1600 ND Hexachlorobenzene

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1249

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 27652 Client ID: B404-2 85.3% Solid Detection Limit Parameter Units: ug/kg (Dry Weight) Units: uq/kq 4-Bromophenyl phenyl ether ND 1600 Phenanthrene 8110 1600 Anthracene 1900 1600 Dibutyl phthalate ND 1600 Fluoranthene 12600 1600 Pyrene 11400 1600 Benzidine ND 3300 Butyl benzyl phthalate 770J 1600 Bis(2-ethylhexyl) phthalate 19100 1600 Chrysene 6820 1600 Benzo(a)anthracene 6470 1600 3,3'-Dichlorobenzidine ND 3300 Di-n-octyl phthalate ND 1600 Benzo(b)fluoranthene 11900 1600 Benzo(k)fluoranthene ND 1600 Benzo(a)pyrene 6140 1600 Indeno(1,2,3-c,d)pyrene 2140 1600 Dibenzo(a,h)anthracene 750J 1600 Benzo(ghi)perylene 1600 1600 N-Nitrosodimethylamine ND 1600

Client: J. H. SORGE		
Client Sample Identification: 8404-2		
Sample No.: 27652 OA Batch No.: 1249 Job No	.: 5621	
Sample No.: 27032 QA Buton		
TENTATIVELY IDENTIFIED COMPOUND	S	_ /
Fraction: BNA Concentration Uni	ts: PPM	PPB 49/48
FIRECTION. DE pr		
	Retention Time	Conc.
COMPOUND NAME	=======	
11 000	28.47	1,200
1. (/3///2 ///	20.55	16001
3. COELUTING CISHIO/CISHIZ PAH'S	28.81	2,3001
- 1		
4. 2-PHENTL-NAPHYHALENE UNKNOWN	3,49	980
6. BENZO [5] NAPHTHO [23-d] FURAN	31.80	1,200
012112	All the second s	1,200
u u	32.51	2,100
9. METHYL- PYRENE ISOMER	32.82	
4	33,11	1,200
11. TH-BENZ [de] ANTHRACEN FONE (ISOMER)	34,14	3,100
(MKADUM)	37.70	
Para [17 10015740 [2.1-17 THIOPHENE (ISONER)		1,600
CONTRACTOR CISTIZ PARTS	74.20	1.800
15. TH-BENZ[de] ANTHRACEN-F-ONE (ISDAYER)	34.79	
16. BENO[5] MAPHTHO[1,2-d] THIOMENE (KONER)	1_37.70	1,800
17. CISHIZ PAH	1 35.61	7.800
18. METHYL- BENZ [a] ANTHURCENE ISOMER		0,100
19. CIGHIY PAH / COELVTING UNKNOWN	1 36.81	1,400
20. C20 H14 PAH COTWING	1 37.20	1,200
21. 5.12-NAPHTHACENEDIONE/ ONENOWN	1 37.40	7,700
22 PRISONAL ACID (11-DIMENHILETHIL) PHENTL DIPHENTLESTER	37.78	1 3,100
23. CZOHIZ PAH	1 38.81	3,100
24. CKNOWN KHOVO05996	39.16	6,600
CIOHU- PAH	21.23	1 7 5 5

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan

Report Date: 9/6/89
Job No.: 5621 - Hov Site E
N.J. Certified Lab No. 12543
QA Batch 1234

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 27652 Client ID: B404-2

	Client ID: B404-2	
<u>Parameter</u>	85.3% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
Aldrin alpha-BHC beta-BHC delta-BHC gamma-BHC (Lindane) Chlordane 4,4'-DDD 4,4'-DDE 4,4'-DDT Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Heptachlor Heptachlor epoxide Toxaphene PCB-1016 PCB-1221 PCB-1232 PCB-1242 PCB-1248 PCB-1254 PCB-1260	ND ND ND ND ND ND ND ND ND ND ND ND ND N	16 16 16 16 16 160 32 32 32 32 32 32 32 32 32 32 32 32 32
		1963

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Michael McGowan Report Date: 9/6/89 Job No.: 5621 - Hov Site E N.J. Certified Lab No. 12543

METALS and WET CHEM

Lab No. 27652 Client ID: B404-2

Parameter Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	Client ID: B404-2 85.3% Solid Units: mg/kg (Dry Weight) ND 4.7 ND 2.1 21 58.4 273 1.17 59 ND 3.0 ND 332	Detection Limit Units: mg/kg 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.0 1.0 2.0 1.0 4.0	Method Code F F P P P A CV P F P
Cyanide Phenols	2.0 ND	1.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

CHECKED IN	7/27/92
DATA ENTERED	

July 22, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. B956

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 6/23-25/92:

Lab No.	Client ID	Analysis Requested
68855 68856 68857 68858 68859 68860 68861 68862 68863 68864 68865 68865	408-11A 408-11B 408-12A 408-12B 408-13A 408-13B 408-14A 408-14B 405-1 405-2 405-3 405-4	PHC PHC PHC PHC PHC PHC PHC PHC PHC PHC
68867	404-2	BN +15 & PHC PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

KH0V005999

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	Section
Methodology Summary/Data Reporting Qualifiers	1
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QA Summary Tables/Non Conformance Summary	3
BFB Spectra	4
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Chain of Custody/Lab Chronicles	. 7

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Absorption	metho			Solid Test	Method
		Water T	est Method	Flame	Furnace
		Flame	Furnace	7020	
Element		202.1	202.2		7041
Aluminum		204.1	204.2	7040	7060
Antimony		204.1	206.2		
Arsenic		209 1		7080	7091
Barium		208.1	210.2	7090	
Beryllium		210.1	213.2	7130	7131
Cadmium		213.1		7140	
Calcium		215.1	218.2	7190	7191
Chromium,	Total	218.1		7197	7195
Chromium,	(+6)	218.4	218.5	7200	7201
Cobalt	53 5 X 1375	219.1	219.2	7210	
Copper		220.1	220.2	7380	
Iron		236.1	236.2	7420	7421
Lead		239.1	239.2	7450	
Magnesium		242.1		7460	
Manganese		243.1	243.2	7520	
Nickel		249.1	249.2	7610	
Potassium	,	258.1		7010	7740
Potassium			270.2	7760	
Selenium		272.1	272.2		
Silver		273.1		7770	
Sodium		283.1	283.2	7870	7841
Tin		279.1	279.2	7840	7911
Thallium		286.1	286.2	7910	
Vanadium		289.1	222 2	7950	
Zinc		207.1			

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
 - J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
 - B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

Report Date: 7/22/92 Job No.: B956 N.J. Certified Lab No. 12543

QA Batch 2363

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	Petr % Solid m	coleum Hydrocarbons
68855	408-11A	79.0	ND
68856	408-11B	84.8	50
68857	408-12A	89.0	ND
68858	408-12B	78.6	170
68859	408-13A	86.8	ND
68860	408-13B	84.3	ND
68861	408-14A	86.8	ND
68862	408-14B	85:6	ND
68863	405-1	88.4	ND
68864	405-2	89.7	ND
68865	405-3	87.6	ND
68866	405-4	82.0	4220
68867	404-2	93.1	315

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 7/22/92 Job No.: B956 N.J. Certified Lab No. 12543 QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES

1,3-Dichlorobenzene 1,4-Dichlorobenzene Hexachloroethane Bis(2-chloroethyl) ether 1,2-Dichlorobenzene Bis(2-chloroisopropyl) ethen N-Nitrosodi-n-propylamine Nitrobenzene Hexachlorobutadiene 1,2,4-Trichlorobenzene Isophorone Naphthalene Bis(2-chloroethoxy) methal Hexachlorocyclopentadiene 2-Chloronaphthalene Acenaphthene Acenaphthene Dimethyl phthalate 2,6-Dinitrotoluene Fluorene 4-Chlorophenyl phenyl ethe 2,4-Dinitrotoluene Diethylphthalate N-Nitrosodiphenylamine	ND ND ND ND 3800J ND ND ND ND ND ND ND ND ND ND ND ND ND	Detection Limit Units: ug/kg 6700 6700 6700 6700 6700 6700 6700 67
Hexachlorobenzene		

Report Date: 7/22/92

Job No.: B956 N.J. Certified Lab No. 12543

QA Batch 1844B

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 68866 Client ID: 405-4

	Client ID: 405-4	
	82.0% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: uq/kq
4 December 2 1 2 1		
4-Bromophenyl phenyl ether		6700
Phenanthrene	9500	6700
Anthracene	ND	6700
Dibutyl phthalate	ND	6700
Fluoranthene	390J	6700
Pyrene	1300Ј	6700
Benzidine	ND	13000
Butyl benzyl phthalate	ND	6700
Bis(2-ethylhexyl) phthalat	ce ND	6700
Chrysene	200Ј	6700
Benzo(a) anthracene	ND	6700
3,3'-Dichlorobenzidine	ND -	13000
Di-n-octyl phthalate	ND	6700
Benzo(b) fluoranthene	ND	6700
Benzo(k) fluoranthene	ND	6700
Benzo(a) pyrene	ND	6700
Indeno(1,2,3-c,d)pyrene	ND	6700
Dibenzo(a,h)anthracene	ND	6700
Benzo(ghi)perylene	ND	6700
N-Nitrosodimethylamine	ND	6700 .

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 405-4 Sample No.: 68866 Job No.: 8956 Fraction: BN	
Concentration Units: PPM PPB	

	Retention	Estimated Conc.
COMPOUND NAME	12 新 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	THE REPORT OF THE PARTY OF THE PARTY.
C13 H28 Clobane Methy Pophhalme women Chemistry Roghthalene women Clementy Roghthalene women C16 H34 Clobane C15 H32 Clobane C15 H34 Clobane C16 H34 Clobane C16 H34 Clobane C16 H34 Clobane C16 H34 Clobane C16 H34 Clobane C16 H38 Clobane C17 H36 Clobane C17 H36 Clobane C17 H36 Clobane C17 H36 Clobane C17 H36 Clobane C18 H28 Clobane C17 H36 Clobane C18 H28 Clobane C17 H36 Clobane C18 H28 Clobane C17 H36 Clobane C18 H28 Clobane C17 H36 Clobane C18 H28 Clobane C18 H28 Clobane C17 H36 Clobane	15.96 17.87 18.16 19.27 19.87 19.85 120.12 120.72	98000 14000 16600 78000 16600 163000 181000 181000 174000 174000 172000 170000 198000 198000
19		
21		
22	_	
23		
24		

1/2

CHAIN-OF-CUSTODY RECORD

This coc. I'm

31880, 846

STATE

Chris Filey

218-0066

ATTENTION

PHONE

FOR REPORT AND BILLINGS

Spring

NAME OF CLIENTY

ADDRESS

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817

(808)848-3800

PROJECT NAME

ENVIROTECH JOB NO. 8956

ENVIROTECH SAMPLE NUMBER 68867 68860 95889 16899 68855 69859 68858 (9889) ANALYSIS REQUESTED PHC SAMPLE LOCATION / DESCRIPTION ۲. نا کی 7.7-7 C Si 10 5.2.2 in in 5 1 5 1) So v 17 5 S V 221-804 108-174 B 21 - 804 408:124 403-114 408 - 11B 11-3ch 41 - 804 NO. OF PRES. MATRIX 7103 SMPLD. HV 2761 SMPLD. 1750 6001 £201 1718 E111 135 2121 26/42/9 SMPLD. DATE

TOTAL NO. OF CONTAINERS:

run But if PHC is over 500 SPECIAL INSTRUCTIONS: ECPA

3. RECEIVED BY:	4. RECEIVED BY:
DATE/TIME 3	DATEITIME
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26 JUNE 32	DATE/TIME -
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M	NAME OF CLIENT	CLIENT	FOR MEPO	THE THE THE				ENVIROTECH RE	ESEARCH,	INC.	
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CLIENT 5	orge		DATE SAMPL		And the second s
MATRIX	Soil		DATE RECEIVED 6/26/92		
SAMPLE No	68855		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	DL	6/30/92	40	2363
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CLIDIT	rge		DATE RECEI	(/2	6/92
MATRIX	Soil			B956	
SAMPLE No	68856		JOB No	Analyst's	QA
analytic	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	_Initials	Batch No.
Parameter	6/29/92	OL	6/30/97	MD	2363
PHC	<u> </u>				
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CLIENT_	orge		DATE SAMPL	ED_ C/	192
MATRIX	Soil		DATE RECEIVED 6/26/92		
SAMPLE No.	68857			B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	<u> </u>	6/30/92	MD	2363
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ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

DATE SAMPLED Sorge 6/26/92 CLIENT_ DATE RECEIVED 3956 MATRIX 68858 JOB No. SAMPLE No._ QA Analyst's Analysis Batch No. Extractor's Extraction Date/Time Initials Analytic Initials Date/Time Parameter 2363 6130/92 MD 6/29/92 OL PHC

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CLIENT	orge		DATE SAMPL		192
MATRIX	Soil		DATE RECEIV	VED 6/2	6/92
SAMPLE No	68859		JOB No	7956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst'sInitials	QA Batch No.
PHC	6/29/92	<u> </u>	6/30/92	110	2363
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CLIENT Borge	DATE SAMPI	(12/1	
MATRIX So'l	JOB No	B956	
SAMPLE No. 68860		Analyst's	QA Batch No.
Analytic Extraction Extract Parameter Date/Time Initia	ls Date/Time	Initials	2363
PHC 6/29/42 OL	6/30/92		
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CLIENT_5	orae		DATE SAMPL	ED C/	192
MATRIX			DATE RECEIVED 6/26/92		
SAMPLE No.			JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	0	6/30/92	MD	2363
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			DATE SAMPL	ED 6/	192
CLIENT	rge			/ /2	6/92
MATRIX	So'1		DATE RECEIV	B956	
SAMPLE No	68862		JOB No	Analyst's	QA
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Initials My	2363
PHC	6/29/92	06	6/3492	<u> </u>	
			-		

	orge		DATE SAMPL		192
MATRIX	Soil		DATE RECEIV	ED_ 6/2	6/92
SAMPLE No			JOB No	73956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's <u>Initials</u>	QA Batch No.
PHC	6/29/92	04	6/30/92	MD	2363
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CLIENT Sor	98		ATE SAMPLEI	1/2//	92
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			OB No	3956	
SAMPLE No			Analysis	A = alvet's	QA
Analytic Parameter -	Extraction Date/Time	Extractor's Initials	Date/Time -	Initials	2363
PHC	6/29/9)	DL	6/30/92	<u>MD</u> _	200
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CLIENT 5	orge		DATE SAMPL	ED G/	192
MATRIX	Soil		DATE RECEIV	VED 6/2	6/92
SAMPLE No	68865		JOB No	B956	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	6/29/92	OL	6/30/92	MO	2363
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CLIENT_50 MATRIX	501	Extractor's Initials OL PM	DATE SAMPL DATE RECEIV JOB No. Analysis Date/Time 6/36/92 7/16/92	/ /2	92 6/92 QA Baich No. 2363 1844

	orge		DATE SAMPL	()-	192		
	Soil		DATE RECEIVED 6/26/92				
SAMPLE No	68867		JOB No	B956			
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's	QA Batch No.		
PHC	7/2/92		7/2/92	MD	2363		
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		•					

777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

CHECKED IN . DATA ENTERED ____

August 13, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C007 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 7/6/92 & 7/7/92:

	Client ID	Analysis Requested
Lab No. 69127 69128 69129 69130 69131 69132 69133 69134 69135 69136 69137 69138 69139 69140 69141 69142 69143 69144 69145 69146 69147	403-1 403-2 403-3 403-4 403-5 403-6 403-7 403-8 403-9 403-10 403-11 403-12 406-1 406-2 406-3 407-1 407-2 407-6 407-7 407-8	BN +15 & PHC PHC PHC PHC PHC PHC PHC PHC PHC PHC
. 03140		1

KH0N006054

Lab No.	Client ID	Analysis Requested				
69149	408-16	VOA +15, BN +15 & PHC				
69150	408-15	VOA +15, BN +15 & PHC				
69151	403-13	PHC				
69152	403-14	PHC				

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

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GC/EC - Raw Data	7
Chain of Custody/Lab Chronicles	8

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested Solid Waste" (SW-846 according to Method 3050 "Acid Digestion of Soil, Sediments and according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

Absorption method release	det noa
Water Test Method Solid Test Method Flame Fundame	rnace
Flame Furnace 7020	
Element 202.2 7020	7041
Aluminum 204.2	7060
Antimony 206.2	
Arsenic	7091
Barium 210.2	7131
Bervllium 213.2 /130	,
Cadmium /140	7191
Calcium 218.1 218.2 7190	7195
Chromium, Total 218.4 218.5 7197	7201
Chromium, (+b) 210.	7201
Cobalt 219.1 320.2 7210	
Copper 220.1 236.2 7380	7421
Tron 230.1 230.1 7420	1421
Tead 239.1 7450	
Magnesium 242.1 7460	
Manganese 243.1	
Nickel 249.1 249.2 7610	
258.1	7740
Colenium 7760	
Selenium 272.1 272.2 7770 37770	
273.1	
283.1 203.2 7940	7841
mballium 279.1 279.2 7910	7911
Vanadium 286.1 286.2 7950	
Vanadium 289.1 289.2 7950 Zinc	

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
 - J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
 - B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2369

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID		roleum Hydroca mg/kg (Dry Wt.	
69127	403-1	86.9	6940	
69128	403-2	87.8	ND	
69129	403-3	88.4	ND	
69130	403-4	88.1	ND	
69131	403-5	87.9	ND	
69132	403-6	69.2	1610	

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2370

PETROLEUM HYDROCARBONS

	PETROLEON MISH		y wdrocarbons
Envirotech	Client ID	Petr % Solid M	oleum Hydrocarbons g/kg (Dry Wt.)
Sample #	403-8	84.3	110
69134		87.8	ND
69135	403-9		120
69136	403-10	86.0	5110
. 69137	403-11	88.2	
69138	403-12	86.6	36
	406-1	89.1	ND
69139	406-2	87.1	ND
69140		89.9	52
69141	406-3		ND
69144	407-4	92.6	
69145	407-5	89.3	ND
	407-6	83.8	130
69146	407-7	91.5	28
69147		90.4	180
69148	407-8	82.8	29300
69149	408-16		1680
69150	408-15	86.7	
69151	403-13	87.6	ИD
	403-14	87.4	ND
69152	1 = 2001212000	w Hydrocarbons	is 25 mg/kg.

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69127 Client ID: 403-1

Parameter Units	86.9% Solid s: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
1,3-Dichlorobenzene 1,4-Dichlorobenzene Hexachloroethane	ND ND ND	6700 6700 6700
Bis(2-chloroethyl) ether 1,2-Dichlorobenzene	ND ND	6700 6700
Bis(2-chloroisopropyl) ether N-Nitrosodi-n-propylamine	ND ND	6700 6700
Nitrobenzene Hexachlorobutadiene	ND ND	6700 6700
1,2,4-Trichlorobenzene Isophorone	ND ND	6700 6700
Naphthalene Bis(2-chloroethoxy) methane Hexachlorocyclopentadiene	ND ND ND	6700 6700 6700
2-Chloronaphthalene Acenaphthylene	ND ND	6700 6700
Acenaphthene Dimethyl phthalate	ND ND	6700 6700
2,6-Dinitrotoluene Fluorene	ND 560J	6700 6700
4-Chlorophenyl phenyl ether 2,4-Dinitrotoluene	ND ND	6700 6700
Diethylphthalate N-Nitrosodiphenylamine	ND ND	6700 6700
Hexachlorobenzene	ND	6700

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 69127 Client ID: 403-1 86.9% Solid Jnits: ug/kg (Dry Weight) ND	Detection Limit Units: ug/kg 6700 6700
4-Bromophenyl phenyl ether	1300J	6700
Phenanthrene	ND	6700
Anthracene Dibutyl phthalate	ND	6700
Fluoranthene	320J	6700
	560J	13000
Pyrene Benzidine	ND	6700
noted honzyl phthalate	ND ND	6700
Bis(2-ethylhexyl) phthalat	e ND	6700
Chrysene	ND	6700
n(a) anthracene	ND	13000
2 21-Dichlorobenziaine	ND	6700
Di-n-octvl phthalace	ND	6700
Bonzo(b) fluoranthene	ND	6700
Benzo(k) fluoranthene	ND	6700
n(a) nyrene	ND	6700
Indono(1, 2, 3-C, d) pyrene	ND	6700 6700
Dibenzo(a,h) anthracene	ND	6700
Benzo(ghi)perylene N-Nitrosodimethylamine	ND	6700

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identificat		
Sample	No.: 69127	Job No.: <u>COO7</u>	Fraction: <u>BA</u>

Concentration Units: PPM

	_	1
/+	DE	(
(1	י ציי	5/

	COMPOUND NAME	Retention Time	Estimated Conc.
========			
	Cia Haio alkarie	1 15.07	10,000
1	0 11 011000		12,000
2	0 11 014000		18,000
3	C - 1/- 0//- 0		17,000
4	6 1/ 01/000		17,000
5	0.11.011.00		14,000
6			10,000
7	.,,		8,400
8	2 11 211 2		12,000
9	0 11 0110-0		12,000
10	2 11 211220		10,000
11			14,000
12	"		9,200
13	11		14,000
14	4		
15			10,000
16			!
17			
18			!
19			
20			!
21			
22			
23			l
24			
25			

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124

VOLATILE ORGANICS

Lab No. 69132 Client ID: 403-6 Detection Limit 69.2% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 5.0 ND 5.0 Benzene ND Bromodichloromethane 5.0 ND 10 Bromoform ND 5.0 Bromomethane ND Carbon tetrachloride 5.0 ND Chlorobenzene 10 ND Chloroethane 10 ND 2-Chloroethylvinyl ether 5.0 ND 10 Chloroform ND Chloromethane 5.0 ND Dibromochloromethane 5.0 ND 1,1-Dichloroethane 5.0 ND 1,2-Dichloroethane 5.0 ND 1,1-Dichloroethene 5.0 trans-1,2-Dichloroethene ND 5.0 ND 1,2-Dichloropropane 5.0 ND cis-1,3-Dichloropropene 5.0 trans-1,3-Dichloropropene ND 5.0 ND Ethyl benzene 5.0 9.1B Methylene chloride 5.0 1,1,2,2-Tetrachloroethane ND 5.0 ND Tetrachloroethene 5.0 ND 5.0 Toluene 1,1,1-Trichloroethane 210 5.0 1,1,2-Trichloroethane ND 5.0 ND Trichloroethene 5.0 ND Trichlorofluoromethane 10 ND Vinyl chloride 5.0 ND Xylenes (Total)

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 403-6		-
Sample No.: 69132 Job No.: Coo7 Fra	ction: v	oc
Concentration Units: PPM PPB		
COMPOUND NAME	Time	Estimated Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND		
2		
3		
5.		
6		
7		
B		
9		
10		
11		
12		
14		
15	.	
16		
17.		
18	.	
19	.	
20		
22		
23		
24	.	

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Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69132 Client ID: 403-6

	CITETIC ID. 403-6	
	69.2% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: uq/kq
4-Bromophenyl phenyl	ether ND	17000
Phenanthrene	670J	17000
Anthracene	ND	17000
Dibutyl phthalate	ND	17000
Fluoranthene	1200Ј	17000
Pyrene	1100Ј	17000
Benzidine	ND	33000
Butyl benzyl phthalat		17000
Bis(2-ethylhexyl) pht	chalate ND	17000
Chrysene	970J	17000
Benzo(a)anthracene	ND	17000
3,3'-Dichlorobenzidin	ne ND	33000
Di-n-octyl phthalate	ND	17000
Benzo(b) fluoranthene	780Ј	17000
Benzo(k)fluoranthene	690J	17000
Benzo(a)pyrene	750J	17000
Indeno(1,2,3-c,d)pyre		17000
Dibenzo(a,h)anthracen	ne ND	17000
Benzo(ghi)perylene	620J	17000
N-Nitrosodimethylamin	ne ND	17000

Client Sample Identification: 403-6 Sample No.: 69/32 Job No.: COO7 Fraction Units: PPM PPB	tion: BN	
COMPOUND NAME	Time	Conc.
1. NO SEMI-VOLATILE ORGANICS FOUND 2.		
18		
20		
23		1

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Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124

VOLATILE ORGANICS

Lab No. 69133 Client ID: 403-7

	CITCHE 1D. 403-7	
Parameter	88.6% Solid	Detection Limit
rarameter	Units: ug/kg (Dry Weight)	Units: ug/kg
Benzene	ND	
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	5.0
Carbon tetrachloride	ND	10
Chlorobenzene	ND	5.0
Chloroethane	ND	5.0
2-Chloroethylvinyl et	ther ND	10
Chloroform	ND ND	10
Chloromethane	ND	5.0
Dibromochloromethane	ND	10
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroeth		5.0
1,2-Dichloropropane	ene ND ND	5.0
cis-1,3-Dichloroprope	ND ND	5.0
trans-1,3-Dichloropro		5.0
Ethyl benzene		5.0
Methylene chloride	ND	5.0
1,1,2,2-Tetrachloroet	3.0JB	5.0
Tetrachloroethene		5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2-Trichloroethane		5.0
Trichloroethene		5.0
Trichlorofluoromethane	ND	5.0
Vinyl chloride		5.0
Xylenes (Total)	ND	10
Milenes (Iocal)	ND	5.0

403-7	
Client Sample Identification: 403-7 Sample No.: 69133 Job No.: 6007 Fra	ction: VOC
Concentration Units: PPM PPB	3
COMPOUND NAME	Retention Estimated
1. NO VOLATILE ORGANICS COMPOUNDS FOUND	
1. NO VOLATILE STATE 2	
34	
6	
8	
10	
12	
14 15 16	
17	

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

Client ID: 403-7

	Cl	ient ID: 403-7	
		88.6% Solid	Detection Limit
Parameter	Units:	ug/kg (Dry Weight)	Units: ug/kg
			Mayour I
2-Chlorophenol		ND	3300
2-Nitrophenol		ND	3300
Phenol		ND	3300
2,4-Dimethylphenol		ND	3300
2,4-Dichlorophenol		ND	3300
2,4,6-Trichlorophenol		ND	3300
4-Chloro-3-methylpheno	01	ND	3300
2,4-Dinitrophenol		ND	17000
2-Methyl-4,6-dinitroph	nenol	ND	17000
Pentachlorophenol		ND	17000
4-Nitrophenol		ND	17000

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69133 Client ID: 403-7

	Client ID: 403-7	
	88.6% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	Units: ug/kg
	■	
4-Bromophenyl phenyl eth	ner ND	3300
Phenanthrene	660J	3300
Anthracene	140J	3300
Dibutyl phthalate	ND	3300
Fluoranthene	1200J	3300
Pyrene	1300J	3300
Benzidine	ND	6700
Butyl benzyl phthalate	ND	3300
Bis(2-ethylhexyl) phthal	ate 510J	3300
Chrysene	860J	3300
Benzo(a) anthracene	ND	3300
3,3'-Dichlorobenzidine	ND	6700
Di-n-octyl phthalate	ND	3300
Benzo(b)fluoranthene	480J	3300
Benzo(k)fluoranthene	560J	3300
Benzo(a)pyrene	170J	3300
Indeno(1,2,3-c,d)pyrene	370J	3300
Dibenzo(a,h)anthracene	160J	3300
Benzo(ghi)perylene	450J	3300
N-Nitrosodimethylamine	ND	3300
tion the transfer of the second secon		

Client Sample Identification: 403-7

Sample No.: 69133 Job No.: 6007 Fraction: 611/4

Concentration Units: PPM

	Collegion		
		m:	Estimated Conc.
	COMPOUND NAME	=======================================	
		14.33	14500
1	MIKNOWA	1/8.13	
2	MAKNOWI MINUTE		11900
3.	CI4HZO OIKANE	18.98	11500_1
4	UNKNOWN	19.49	11500
5	MAKNOWN WILLIAM	19.55	13000
6	unknown alkane	120.07	14500
7	a Hall CIKINE	121.54	1900
8	MAKHOWA alkane		1500
9	1.17) \$ 17 (50)	125.02	-13400
10	CIT H36 alkane	1 24.39	12200
11	MIKHOWN	124.40	1900
12	CIRHER alkane	20, [7	2200
13	MIKNOWN alkane	20.25	1,500
14	//	- 3501	2600
16	LIAKIDINA SEETOICI		3,400
17	<i>i</i> /	36.59	
18	//	36,75	2600
19	INVICHOLVII	137.13	1900
20	UNKNOWN AIRCINIS	137.20	
21	UNKHOWA	37.78	3 1500
	11	37.8	
23	4	39.5	0 12:600
24			
25			NIONOBEO AS

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Lab No. 69133 Client ID: 403-7

	Client ID: 403-7	
Parameter	88.6% Solid Units: ug/kg (Dry Weight)	Detection Limit <u>Units: uq/kq</u>
Aldrin	ND	16
alpha-BHC	ND	16
beta-BHC	ND	16
delta-BHC	ND	16
gamma-BHC (Lindane)	ND	16
Chlordane	ND	160
4,4'-DDD	ND	32
4,4'-DDE	ND	32
4,4'-DDT	ND	32
Dieldrin	ND	32
Endosulfan I	ND	16
Endosulfan II	ND	32
Endosulfan sulfate	ND	32
Endrin	ND	32
Endrin aldehyde	ND	32
Heptachlor	ND	16
Heptachlor epoxide	ND	16
Toxaphene	ND	320
PCB-1016	ND	160
PCB-1221	ND	160
PCB-1232	ND	160
PCB-1242	ND	160
PCB-1248	ND	160
PCB-1254	ND	160
PCB-1260	ND	160

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69133

Parameter Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	Lab No. 69133 Client ID: 403-7 88.6% Solid Units: mg/kg (Dry Weight) ND 2.7 ND ND 13.1 43.3 428 0.24 10 ND ND ND ND ND ND ND ND ND ND ND ND ND	Detection Limit Units: mg/kg 6.0 0.5 0.5 0.5 1.0 2.5 5.0 0.1 4.0 0.5 1.0 5.0 2.0	Method Code P F P P P CV P F P
Cyanide	ND	1.0	
Phenols	13.0	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69137 Client ID: 403-11

	~ 1.	Telle II	J. 4U.	, <u> </u>		
		88.2%	Solid	1	Detect	ion Limit
Parameter	Units:	uq/kg	(Dry	Weight)	Unit	s: ug/kg
1,3-Dichlorobenzene		ì	1D	-		670
1,4-Dichlorobenzene		ŀ	1D			670
Hexachloroethane		1	1D			670
Bis(2-chloroethyl) ether		1	ND			670
1,2-Dichlorobenzene		1	1D			670
Bis(2-chloroisopropyl) eth	ner	1	1D			670
N-Nitrosodi-n-propylamine		1	1D			670
Nitrobenzene		1	1D			670
Hexachlorobutadiene		1	ND.			670
1,2,4-Trichlorobenzene		1	ND.			670
Isophorone		N	ID.			670
Naphthalene		N	ID			670
Bis(2-chloroethoxy) methan	ne	N	ID			670
Hexachlorocyclopentadiene		N	ID			670
2-Chloronaphthalene		N	ID			670
Acenaphthylene		N	ID			670
Acenaphthene		N	ID			670
Dimethyl phthalate		N	ID			670
2,6-Dinitrotoluene		N	ID			670
Fluorene		N	ID			670
4-Chlorophenyl phenyl ethe	er	N	ID			670
2,4-Dinitrotoluene		N	ID			670
Diethylphthalate		N	ID			670
N-Nitrosodiphenylamine		N	ID			670
Hexachlorobenzene		N	ID			670

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

<u>Parameter</u> <u>Un:</u>	Lab No. 69137 Client ID: 403-11 88.2% Solid ts: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
		670
	ND	670
4-Bromophenyl phenyl ether	130J	670
Phenanthrene	36J	670
Anthracene	ND	
Dibutyl phthalate	220J	670
Fluoranthene	200J	670
Pyrene	ND	1300
Benzidine	5.75	670
bonzyl phthalate	ND	670
Bis(2-ethylhexyl) phthalate	ND	670
Bis (2-echylhex)-/	140J	670
Chrysene	ND	1300
Benzo(a) anthracene	ND .	670
3,3'-Dichlorobenzidine	ND	
n:octvi phthalate	110J	670
page (b) fluorantnene	94J	670
Benzo(k) fluoranthene	120J	670
n(a) nyrene	100J	670
radono(1, 2, 3-C, Q) pyrene	19J	670
Dibenzo(a,h)anthracene		670
Dibenzo(a,n,andene	94J	670
Benzo(ghi)perylene N-Nitrosodimethylamine	ND	980

Client	Sample Identifica	tion: <u>403-11</u>		
Sample	No.: <u>69137</u>	Job No.: <u>COO7</u>	Fraction:	BN

Concentration Units: PPM PPB

	COMPOUND NAME	Retention Time	Conc.
1.	UNKNOWN	126.05	380
2.	il :	2.6.25	300
3.		35.05	530
	Lí .	36.67	450 1
5.			
			1
			1
9.			
10.			
12.			
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25.			

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Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124

VOLATILE ORGANICS

Parameter <u>Uni</u>	Lab No. 69142 Client ID: 407-1 90.5% Solid ts: uq/kq (Dry Weight)	Detection Limit Units: uq/kq
Benzene Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chloroethane 2-Chloroethylvinyl ether Chloroform Chloromethane Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethene trans-1,2-Dichloropropane cis-1,3-Dichloropropane cis-1,3-Dichloropropane trans-1,3-Dichloroprope Ethyl benzene Methylene chloride 1,1,2,2-Tetrachloroethane Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichlorofluoromethane Trichlorofluoromethane Trichlorofluoromethane Trichlorofluoromethane	ND ND ND ND ND ND ND ND ND ND ND ND ND N	5.0 5.0 5.0 10 5.0 10 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.
Xylenes (Total)		

Client Sample Identification: 404-1		
Sample No.: 69142 Job No.: C007 Frac	tion:	oc
Concentration Units: PPM PPB		
		2.1
COMPOUND NAME	Time	Estimated Conc.
: 斯爾與當記鄉建設在保管學學學的教育在以天室宗廷包括京堂是政策學書店在西班里學家企会經濟學學院 :		
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC		
2		
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4		
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KH0V006053

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

Parameter	C1	Lab No. 69142 ient ID: 407-1 90.5% Solid ug/kg (Dry Weight)	Detection Limit Units: ug/kg
		ND	330
2-Chlorophenol		ND	330
2-Nitrophenol			330
Phenol		ND	330
2,4-Dimethylphenol		ND	330
2,4-Dichlorophenol		ND	330
2,4-bichiolophenol		ND	330
2,4,6-Trichlorophenol	0.1	ND	
4-Chloro-3-methylphen	.01	ND	1700
nimitrophenol		ND	1700
2-Methyl-4,6-dinitrop	henol		1700
Pentachlorophenol		ND	1700
4-Nitrophenol		ND	-

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69142 Client ID: 407-1

	CIICHE ID. 107 I	
	90.5% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight	Units: ug/kg
1,3-Dichlorobenzene	םא –	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	. 330
Bis(2-chloroisopropyl) eth	er ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methan	e ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ethe	r ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

4-Bromophenyl phenyl ether phenanthrene Anthracene Dibutyl phthalate Fluoranthene Pyrene Benzidine Butyl benzyl phthalate Bis(2-ethylhexyl) phthalate Chrysene Benzo(a) anthracene 3,3'-Dichlorobenzidine Dien-octyl phthalate	ND ND 22J 21J ND ND	Detection Limit Units: ug/kg 330 330 330 330 330 330 330 330 670 330 330 330 330 330 330 330 330 330
Benzo(a)anthracene	ND ND	670 330
Benzo(b) fluoranthene Benzo(k) fluoranthene	235 ND 12J ND	330 330 330 330
Indeno(1,2,3-c,d)pyrene Dibenzo(a,h)anthracene Benzo(ghi)perylene N-Nitrosodimethylamine	ND ND ND	330 330

25._____

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 407-1	
1007 mation 811/A	
Sample No.: 109142 Job No.: 007 Fraction: BN/A	
Concentration Units: PPM (PPB)	

Retention | Estimated Time Conc. COMPOUND NAME 1. <u>UNKNOWN</u> 14.77 330 4 4.____ 10.____ 12._____ 13.____ 15.____ 17._____ 19._____ 20.____ 23._____

KH0V006057

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69142 Client ID: 407-1

	Client ID: 407-1		
	90.5% Solid	Detection Limit	
<u>Parameter</u>	Units: mg/kg (Dry Weight)	Units: mg/kg	Method Code
Antimony	ND	6.0	P
Arsenic	1.1	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	8.8	1.0	P
Copper	35.9	2.5	P
Lead	40	5.0	P
Mercury	ND	0.1	CV
Nickel	8.7	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	50.9	2.0	P
Cyanide	ND	1.0	
Phenols	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124

VOLATILE ORGANICS

	Lab No. 69143 Client ID: 407-2 90.0% Solid s: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
Benzene Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane 2-Chloroethylvinyl ether Chloromethane Dibromochloromethane 1,1-Dichloroethane 1,2-Dichloroethane 1,1-Dichloroethene trans-1,2-Dichloropropane cis-1,3-Dichloropropane cis-1,3-Dichloropropene trans-1,2-Tetrachloroethan 1,1,2,2-Tetrachloroethan Tetrachloroethene Toluene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene Trichloroethene Trichlorofluoromethane Vinyl chloride Xylenes (Total)	ND ND ND 1.9JB	5.0 5.0 5.0 10 5.0 10 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.

Client	Sample Identification: 4-07-2	
Sample	No.: 69143 Job No.: C007	Fraction: VOC
	Concentration Units: PPM	PPB

COMPOUND NAME	Retention Time	Estimated Conc.
	宗台外《早期平法野田河河市 第	
1. NO VOLATILE ORGANICS COMPOUNDS FOUND	1 1	
2	1	
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4.		
6		
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9		4
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21		
23		
4		
25.		

KH0V006061

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

Lab No. 69143 Client ID: 407-2 90.0% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
	330
	330
	330
	330
	330
•	330
ND	330
O] ND	1700
ND	
hanal ND	1700
die iloi	1700
	1700
No	
	Client ID: 407-2 90.0% Solid Units: ug/kg (Dry Weight) ND ND ND ND ND ND ND ND ND ND ND ND ND

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69143 Client ID: 407-2

	90.0% Solid	Detection Limit
<u>Parameter</u> <u>U</u>	Jnits: ug/kg (Dry Weight)	Units: ug/kg
	N 10 10 100 0000000	
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ethe	er ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methane	nD	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

4-Bromophenyl phenyl ether Phenanthrene Anthracene Dibutyl phthalate Fluoranthene Pyrene Benzidine Butyl benzyl phthalate Bis(2-ethylhexyl) phthala Chrysene Benzo(a) anthracene 3 21-Dichlorobenzidine	ND ND 14J 13J ND ND ND ND ND ND ND ND ND ND ND ND ND	Detection Limit Units: ug/kg 330 330 330 330 330 330 330 330 330 3
Benzidine Butyl benzyl phthalate Bis(2-ethylhexyl) phthala Chrysene	ND ND 9.8J ND ND ND 14J ND 6.6J ND ND	330 330 330 670
Benzo(ghi)perylene N-Nitrosodimethylamine	ND ND	330

Client	Sample Identifica	tion: 407-2	
Sample	No.: 69143	Job No.: <u>COO7</u>	Fraction: BN/A

Concentration Units: PPM PPB

======	COMPOUND NAME	Retention Time	Estimated Conc.
1. NO	SEMI-VOLATILE ORGANICS FOUND		
2.	OZAT VOLKATILE ORGANICS FOUND V		
3.			
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23			
24			

KH0V006065

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Report Date: 8/13/92
Job No.: C007 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69143 Client ID: 407-2

<u>Parameter</u>	Client ID: 407-2 90.0% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code
Antimony	ND	6.0	P
Arsenic	1.2	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	6.3	1.0	P
Copper	30.4	2.5	P
Lead	8.5	5.0	P
Mercury	ND	0.1	CV
Nickel	6.5	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	31.2	2.0	P
Cyanide	ND.		
Phenols	ND	1.0	
FILEHOLS	ND	5.0	

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124D

VOLATILE ORGANICS

	ND ND ND 17JB	Detection Limit
--	------------------------	-----------------

Client Sample Identification: 408-16	
Sample No.: 69149 Job No.: 6007	Fraction: VCC
Concentration Units: PPM	PPB

===	COMPOUND NAME	Retention Time	Estimated Conc.
1.	1.1,3-trimethylcyclohexans	SING CONTRACTOR STATE	180
2.		25.24	50
3.	Emylmethylcycleheaune isamer	126.31	110
4.	unknown	27.79	220
5.	Cattle hydrocartanko-eluting Cathi	28.53	220
6.	Cotto hydrocarbanko-eluting Cotto	30.05	440
7.	CICHS "	30.57	150
8.	unknown	31.49	162
9.	Decatydirnaphthaiene	33.34	480
10.	(2-methy/propy) ayclohexane	37.27	860
11.		52.63	240
		63.40	340.
13			
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	-		
	. 8		
25.			

KH0V006069

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES

Lab No. 69149 Client ID: 408-16 Detection Limit 82.8% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 3300 ND 1,3-Dichlorobenzene 3300 ND 3300 1,4-Dichlorobenzene ND 3300 Hexachloroethane ND Bis(2-chloroethyl) ether 3300 ND 1,2-Dichlorobenzene 3300 ND Bis(2-chloroisopropyl) ether 3300 ND N-Nitrosodi-n-propylamine 3300 ND 3300 Nitrobenzene ND 3300 Hexachlorobutadiene ND 1,2,4-Trichlorobenzene 3300 ND 3300 Isophorone ND 3300 Naphthalene ND Bis(2-chloroethoxy) methane 3300 ND Hexachlorocyclopentadiene 3300 ND 3300 2-Chloronaphthalene ND 3300 Acenaphthylene ND 3300 Acenaphthene ND 3300 Dimethyl phthalate ND 3300 2,6-Dinitrotoluene ND 3300 Fluorene ND 4-Chlorophenyl phenyl ether 3300 ND 3300 2,4-Dinitrotoluene ND 3300 Diethylphthalate ND 3300 N-Nitrosodiphenylamine ND Hexachlorobenzene

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543

QA Batch 1848M-B

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69149 Client ID: 408-16

	011cmc 1D. 100 10	
<u>Parameter</u>	82.8% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ether Phenanthrene Anthracene Dibutyl phthalate Fluoranthene Pyrene Benzidine Butyl benzyl phthalate Bis(2-ethylhexyl) phthalate Chrysene Benzo(a) anthracene 3,3'-Dichlorobenzidine Di-n-octyl phthalate Benzo(b) fluoranthene Benzo(k) fluoranthene Benzo(a) pyrene Indeno(1,2,3-c,d) pyrene Dibenzo(a,h) anthracene Benzo(ghi) perylene N-Nitrosodimethylamine	ND ND ND ND ND ND ND ND ND ND ND	3300 3300 3300 3300 3300 3300 6700 3300 3300 6700 3300 3300 3300 3300 3300 3300 3300 3300 3300

TENTALIZA	
Client Sample Identification: 408-16 Sample No.: 69149 Job No.: C007 Free Concentration Units: PPM (PP)	Retention Estimated
COMPOUND NAME	Time Conor
1	38.48 30000 39.90 30000 40.93 30000
10	
17	
22	

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2124D

VOLATILE ORGANICS

Lab No. 69150 Client ID: 408-15

	Client 1D: 408-15	
	86.7% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	Units: ug/kg
Benzene	ND	10
Bromodichloromethane	ND	10
Bromoform	ND	- 10
Bromomethane	ND	20
Carbon tetrachloride	ND	10
Chlorobenzene	ND	10
Chloroethane	ND	20
2-Chloroethylvinyl et	ther ND	20
Chloroform	ND	10
Chloromethane	ND	20
Dibromochloromethane	ND	10
1,1-Dichloroethane	ND	10
1,2-Dichloroethane	ND	10
1,1-Dichloroethene	ND	10
trans-1,2-Dichloroeth	nene ND	10
1,2-Dichloropropane	ND	10
cis-1,3-Dichloroprope	ene ND	10
trans-1,3-Dichloropro	pene ND	10
Ethyl benzene	ND	10
Methylene chloride	6.8JB	10
1,1,2,2-Tetrachloroet	thane ND	10
Tetrachloroethene	ND	10
Toluene	ND	10
1,1,1-Trichloroethane	ND	10
1,1,2-Trichloroethane	ND	10
Trichloroethene	ND	10
Trichlorofluoromethan	e ND	10
Vinyl chloride	ND	20
Xylenes (Total)	ND	10
15 18 5	5.8052	

408-15				
Client Sample Identification: 408-15 Sample No.: 69150 Job No.: 6007 Fraction: YOC				
Sample No.: 69150 Job No.:				
	i			
Concentration Units: PPM (PPB)				
	Retention	Estimated		
COMPOUND NAME	Time	Conc.		
COMPOUND NAME				
	25.03	31		
	26.32	32		
me the later	1 28.61	53		
	30.06	110		
· CIOHZO MIGRIE CARICA	131.53	40		
5. un kneum	133.01	340		
6n	137.93	310		
1	139.71	210		
8.23-dihydro-methyl-1H Indene isomer 9. Ethyldimethylbengene isomer/co-eluting unknown	155.87	687		
a Bhuldimethylbengene isomer for them	71			
10	<u> </u>			
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	_			
13	_			
14	_			
15	_			
16	_			
17	_			
18				
19	_!			
20		_		
21	!			
22				
23	1			

Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES

Lab No. 69150 Client ID: 408-15

P	86.7% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: uq/kq
1,3-Dichlorobenzene	ND	3300
1,4-Dichlorobenzene	ND	3300
Hexachloroethane	ND	3300
Bis(2-chloroethyl) ether	ND	3300
1,2-Dichlorobenzene	ND	3300
Bis(2-chloroisopropyl) etl	ner ND	3300
N-Nitrosodi-n-propylamine	ND	3300
Nitrobenzene	ND	3300
Hexachlorobutadiene	ND	3300
1,2,4-Trichlorobenzene	ND	3300
Isophorone	ND	3300
Naphthalene	74 J	3300
Bis(2-chloroethoxy) methar	ne ND	3300
Hexachlorocyclopentadiene	ND	3300
2-Chloronaphthalene	ND	3300
Acenaphthylene	80J	3300
Acenaphthene	180J	3300
Dimethyl phthalate	ND	3300
2,6-Dinitrotoluene	ND	3300
Fluorene	190Ј	3300
4-Chlorophenyl phenyl ethe	er ND	3300
2,4-Dinitrotoluene	ND	3300
Diethylphthalate	ND	3300
N-Nitrosodiphenylamine	ND	3300
Hexachlorobenzene	ND	3300

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876 Attention: Mr. Chris Finley Report Date: 8/13/92 Job No.: C007 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850A

BASE/NEUTRAL EXTRACTABLES (con't)

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample	: Identifica	tion: 408-15	
Sample	No.:	69150	Job No.: <u>COO7</u>	Fraction: BN

Concentration Units: PPM (PPB)

	Retention	Estimated
COMPOUND NAME	Time	Conc.
1. unknown alkane	1_13.44_1	1500
2	13.63	1,500
3. CI3Has alkane	1 15.29	4200 1
4.2-butyl-1,1,3-trimethyl-Cyclohexane		
5. unknown alkane	1 16.34 1	2,700 1
6	17.11	2,300
7	1 18.09	3,100 1
8	1 19.45	2,300
9. unknown	120.821	1,900_1
10. unknown alkane	122.20	2300
11	1 22.98	2300 1
12	124.35	1900 1
13i[13350	1,500 1
14	36.15	1900 1
15. UNKNOWN	137.79	2700 1
16	-	1
17	-	
18		
19	-	
20	-	
21	-1	
22	-	
23	-1	
24	-	
25	-1	

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	PROJECT No.: 92050	CHAIN OF CUSTONY BECORD	SAMPLE	MATERIAL	2014			-	,		>				y !		
	PROJECT No.: 92050	OF CUSTO		CKIP HON									RECEIVED BY	0/1. (6	100		
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JM SORCE, C.O.C. No.: 1574	518 69 199 69 193 69 193	DATE / TIME 7/9/92 8:50	
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7/8/92 900 Leaf pit: 7.0-7.5 H 3/8/92 901 : 2.5-2.0 H 13/8/92 901 2.5-2.0 H 13/8/92 901 0/3/3/2 0/3/3/2 0/3/2 0/3/2 0		1/2/4	0 %	. 9.0	4.54			69150	15 PHC
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CLIENT	Sorge			ED 7/6/	
MATRIX	5011		DATE RECEIV	VED_ 7/9/	92
SAMPLE No.	69127		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/9/92	<u> </u>	7/10/92	MO	2369
BN+15	7/15/92		7/10/92	<u> </u>	1
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Sorge	DATE SAMPLE	7/9/	12
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MAIRIA	JOB No	C007	
SAMPLE No.	Analysis	Analyst's Initials	OA Batch No.
Analytic Extraction Initials	Date/Time_	MO	2369
Tarameter C.	7/10/92		
PHC 7/9/92 - 11			
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CLIENT	Sorge		DATE SAMPL	ED 7/7/	92
MATRIX			DATE RECEIV	VED_ 7/9/	92
SAMPLE No	10120		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/9/92	<u>NL</u>	7/10/92	MO	2369

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MATRIX SAMPLE No Analytic Parameter	Sorge Soil 69130 Extraction Date/Time 7/9/92	Extractor's Initials	DATE SAMPLE DATE RECEIV JOB No Analysis Date/Time 7/10/92	ED7/7/ VED7/9/ C007 Analyst's Initials M()	92 92 QA Batch No. 2369
PHC					
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CLIENT	Sorge		DATE SAMPL	ED 7/7/	192
MATRIX	-		DATE RECEI	VED_ 7/9/	192
SAMPLE No	69131		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor'sInitials	Analysis Date/Time	Analyst's Initials	QA Baich No.
PHC	7/9/92	<u> </u>	7/10/92	140_	2369
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				7/7/	92
CLIENT	Sorge		DATE SAMPLI	7/9/	92
MATRIX	501		JOB No	C007	
SAMPLE No	69132		Analysis	Analyst's	QA
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Date/Time	Initials MO	2369
PHC	7/9/92	OL	7/10/92	ce	2124
VUATIS			7/14/92	JP	1850
BN+15	7/15/92	SS	7/16/46	<u>JP</u>	
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CLIENT	Sorge		DATE SAMPL	ED 7/7	192
MATRIX	Soil		DATE RECEIV		192
	69133		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's	Analysis Date/Time	Analyst's Initials	QA Batch No.
YOA +			7/14/92	cc	21201
ABN	7-1792	SS	7/16/92	JP_	1850
PCB Pest.	710-92	<u>k</u> S	7-28-92	Ran	1888
Antimony	7/16/92	BT	7/17/92 1253	m	1967
Beryllium				-	
Cadmium					
Chromium					
Copper				-	
Nickel					
Silver					
Zinc				<u> </u>	
Mercury			7/10/92	BT	
Arsenic			1/2/12/90	45	
Lead			7/17/92 125	3 2M	
Selenium			H24/92 014	43	
Thallium			7/4/2 1615		1
Cvanide	7/13/92	77	7/27/92	70	1269
Phenols	7/13/92	<u>Pl</u>	7/22/92	RR	

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

DATE SAMPLED_ Sorge 7/9/92 CLIENT_ DATE RECEIVED_ 501 c007 MATRIX_ 69134 JOB No. SAMPLE No. QA Analyst's Analysis Extractor's Batch No. Initials Extraction Date/Time Analytic Initials Date/Time MD 2370 Parameter 7/14/92 7/10/97 DL

CLIENT	Sorge		DATE SAMPI	ED 7/7	192
MATRIX	~		DATE RECEI	VED 7/9	192
SAMPLE No.	1017.		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	<u>OL</u>	7/13/92	<u>MD</u>	2370

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CLIENT	Sorge Soll 69136 Extraction Date/Time 7/10/92	Extractor's Initials OL	DATE SAMPLE DATE RECEIV JOB No Analysis Date/Time 7/14/92	ED 7/9, C 007 Analyst's Initials	92 192 QA Batch No. 2370
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CLIENT	Sorge		DATE SAMPL	ED 7/7/	92
MATRIX	Soil		DATE RECEIV	ED 7/9/	92
SAMPLE No	69137		JOB No	C007	
Analytic Parameter PHC	Extraction Date/Time 7/10/92	Extractor's Initials OL	Analysis Date/Time 7/14/92	Analyst'sInitials	DA Batch No.
	7/15/92		7/17/92		1850
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CLIENT_Sorge	= 10 1	7/9/97	
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MATRIX_SOL	JOB No	c 007	
/ Q13X	JOB No		
SAMPLE NO.		A lvet's	QA
Friracior's	Analysis	Initials	Batch No.
Analytic Extraction Initials			22
Taramata.	7/14/92	MD	2370
PHC 7/1/dg2 OL		7	
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CLIENT	Sorge		DATE SAMPLED 6/3/92		
MATRIX	Soil		DATE RECEIV	VED7/4	9/92
SAMPLE No.	69139		JOB No	L007	
Analytic Parameter PHC	Extraction Date/Time 7/10/92	Extractor'sInitials DL	Analysis Date/Time 7/14/92	Analyst's Initials MO	QA Batch No.
	7/10/47		7/14177		2370
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CLIENT	Sorge		DATE SAMPL	VED_7/9/	92
MATRIX	Soil			C007	
SAMPLE No	Extraction	Extractor's	JOB No Analysis Date/Time	Analyst's Initials	QA Batch No.
Analytic Parameter	Date/Time	Initials OL	7/14/92	40	2370_
PHC	7/10/92	<u> </u>			
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CLIENT	Sorge		DATE SAMPI	ED6/-	31/92
MATRIX	Soil		DATE RECEI	- 11	1192
SAMPLE No.	6914	(/	JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	<u>OL</u>	7/14/92	140	2370
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CLIENT	Sorge Soil 691472 Extraction Date/Time 7-17-92 7-10-92 7/16/92 2/16/92 7/13/	7/24/22 7/24/22 7/24/22 7/24/22	2 BT 130 TM	QA Batch No. 2124 1850 1888 1967
Cyanide Phenols	7/13/		<u> </u>	
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ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (201) 549-3900

CLIENT	Sorge		DATE SAMPL	ED 7/2	192
MATRIX	Soil		DATE RECEI	VED 7/9	192
SAMPLE No	69143		JOB No	^	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
voa+			7/14/92	a	2124
ABN	7-1397	<u> 22</u>	7/22/42	40	1850
PCB Pest.	3-10-42	<u>ES</u>	7-28-92	RAM	1888
Antimony	7/16/92	BT	2/17/12 1309	200	1967
Beryllium					
Cadmium					
Chromium					
Copper	-				
Nickel					
Silver					
Zinc				1	
Mercury			2/16/92	BT	
Arsenic		100	4/7/9/17	5 413	
Lead			7/11/92 130	g JM	
Selenium			1/2/2019	s uB	
Thellium		- 1	7/21/2/21240	2	1
Cyanide	1/13/42	77	7/27/12	46	1209
Phenols	7/72/92	RR	1/22/92	RR	1194

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CLIENT_Sorge MATRIX_SOUL SAMPLE No 69144	108 110	c 007	
Extraction Extractor's	Analysis Date/Time	Initials -	2370
Parameter Date/This	7/14/92	140	
PHC 7/10/92 UL	· .		
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CLIENT	Sorge	Anna Artenna de Caractería de	DATE SAMPI	ED 7/8/	92
MATRIX	Soil		DATE RECEI	VED_ 7/9/	192
SAMPLE No.	69145		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	<u>OL</u>	7/14/92	<u>MD</u>	2370
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5-600	DATE SAMPLI	ED	
CLIENT_Sorge	DATE RECEIV	VED	
MATRIX_SOL	JOB No	1 00-1	
SAMPLE No. 69146 Analytic Extraction Extractor's Initials	Analysis Date/Time	1	QA Batch No.
Parameter Date/Time Initials PHC 7/10/92 0L	7/14/92	MD	2370
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CLIENT MATRIX SAMPLE No.	Sorge Soil 69147		DATE SAMPL DATE RECEIV	ED 7/8/ VED 7/9/	92
Analytic Parameter	Extraction Date/Time	Extractor's	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	OL	7/14/92	MO	2370
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	_		DATE SAMPL	ED 7/8/	92
CLIENT	Sorge		DATE SAME	VED	192-
	Soil		DATE RECEI	VED	
MATRIX	69148		JOB No	C007	
SAMPLE No	69190			Analyst's	QA
	Extraction	Extractor's	Analysis Date/Time	Initials	Batch No.
Analytic Parameter	Date/Time	Initials	7/14/92		2370
PHC	7/10/92	DL	- /114191		
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CLIENT	Sorge			ED 7/6	
MATRIX	Soil		DATE RECEIV	ED_ 7/9	192
SAMPLE No	. 0		JOB No		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/10/92	OL	7/14/92	MO	2370
VONTIE			7/17/92	ce	2124
BN+15	7/15/92	22_			1850
MED LEV BN	7/17/92	BJR	7/22/42	40	1848
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CLIENT_Sorge		DATE SAMPLE	- 1010-	
501		DATE RECEIV	c 007	
SAMPLE No. 69150		JOB No	Analyst's	QA
Analytic Extraction In	itials	Date/Time	Initials -	2370
PARAMETER DATE/TIME PHC 7/10/92	1L	7/14/92	mo cc	2124
NON LINE		7117/92	- 2P	1850
BNHS 7/15/92	55	7/17/92		
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		voman-coron		

CLIENT	Sorge		DATE SAMPI		
MATRIX	Soll		DATE RECEI	VED	192
SAMPLE No.	69151		JOB No	C007	
Analytic Parameter	Extraction Date/Time	Extractor's	Analysis Date/Time	Analyst'sInitials	QA Batch No.
PHC	7/10/92	DL	7/14/92	40	2370
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CLIENT Sorge MATRIX Soll SAMPLE No. 69152 Analytic Extraction Extractor's Initials PHC 7/10/92 DL	DATE SAMPLED 7/8/92 DATE RECEIVED 7/9/92 JOB No. C 007 Analysis Analysi's OA Date/Time Initials Batch No. 7/14/92 MD 2370

777 New Durham Road Edison, New Jersey 08817 Tel: (908) 549-3900 Fax: (908) 549-3679

CHECKED IN	8/13/92
DATA ENTERED	

August 13, 1992

J.M. Sorge, Inc. 50 County Line Road Somerville, NJ 08876

Attention: Mr. Chris Finley

Re: Job No. C022 - Hovnanian

Dear Mr. Finley:

Enclosed are the results you requested for the following samples taken 7/9/92 & 7/10/92:

Lab No.	Client ID	Analysis Requested
69339	B406-1	PHC
69340	B406-2	PHC
69341	B406-3	PHC
69342	B406-4	PHC
69343	B406-5	PHC
69344	B406-6	PP Metals & PHC
69345	B406-7	PHC
69346	B406-8	PHC
69347	B406-9	PP Metals & PHC
69348	B408-16	PHC
69349	B408-17	PHC
69350	B408-18	PHC
69351	B407-9	PHC
69352	B408-19	VOA +15, BN +15 & PHC
69353	B409-8	VOA +15 & PHC
69354	B408-20	PHC
69355	B408-21	PHC
69356	B408-22	PHC
69357	B408-23	PHC
69358	B408-24	PHC
69359	408-PS	PP +40
69360	B409-1	PHC
		1110

KH0V006109

- 1. No	Client ID	Analysis Requested
Lab No. 69361 69362 69363 69364 69365	B409-2 B409-3 B409-4 B409-5 B409-6	PHC PHC PHC PHC PHC

Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban Laboratory Manager

TABLE OF CONTENTS

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Methodology Summary/Data Reporting Qualifiers	1
Sample Data Summary Tables	2
QA Summary Tables/Non Conformance Summary	3
BFB/DFTPP Spectra	. 4
Standard Calibration and Calibration Check Reports	5
GC/MS - Raw Data	6
GC/EC - Raw Data	7
Chain of Custody/Lab Chronicles	8

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

-1			Test Method	Solid	Test Method
Element		Flame	<u>Furnace</u>	Flame	Furnace
Aluminum		202.1	202.2	7020	
Antimony		204.1	204.2	7040	7041
Arsenic			206.2		7060
Barium		208.1		7080	
Beryllium		210.1	210.2	7090	7091
Cadmium		213.1	213.2	7130	7131
Calcium		215.1		7140	
Chromium,	Total	218.1	218.2	7190	7191
	(+6)	218.4	218.5	7197	7195
Cobalt	(/	219.1	219.2	7200	
Copper		220.1			7201
Iron			220.2	7210	
		236.1	236.2	7380	
Lead		239.1	239.2	7420	7421
Magnesium		242.1		7450	-
Manganese		243.1	243.2	7460	
Nickel		249.1	249.2	7520	***
Potassium		258.1		7610	
Selenium			270.2		7740
Silver		272.1	272.2	7760	-
Sodium		273.1		7770	
Tin		283.1	283.2	7870	
Thallium		279.1	279.2	7840	7841
Vanadium		286.1	286.2	7910	7911
Zinc					1311
arne		289.1	289.2	7950	

Cyanide:

Water samples are analyzed for cyanide using EPA Method Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Water samples are analyzed for total phenols using EPA Phenols: Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide Reactivity and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

- ND The compound was not detected at the indicated concentration.
 - J Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration given is an approximate value.
- B The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2371

PETROLEUM HYDROCARBONS

Envirotech		Petro:	leum Hydrocarbons /kg (Dry Wt.)
Sample #	Client ID	92.1	ND
69339	B406-1	85.2	210
69340	B406-2	89.1	25
69341	B406-3		ND
69342	B406-4	88.5	ND
69343	B406-5	89.5	54
69344	B406-6	88.3	ND
69345	B406-7	87.8	ND
69346	B406-8	91.5	*
69347	B406-9	90.7	ND
10 Table 1	B408-16	86.0	60
69348	B408-17	86.3	30
69349	B408-18	86.0	ND
69350	B407-9	90.4	ИD
69351	B408-19	83.8	1690
69352	B409-58	76.0	37
69353		87.2	ND
69354	B408-20	85.7	ND
69355	B408-21	84.2	26
69356	B408-22	83.7	ND
69357	B408-23	Hydrocarbons	is 25 mg/kg.
36	- DotroleUM	HAUT OCAT TOTAL	5//

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2372

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	<pre>% Solid</pre>		Hydrocarbons (Dry Wt.)
69358	B408-24	85.2		-ND
69359	408-P5	88.6	-	ND
69360	B409-1	84.6		ND
69361	B409-2	87.8	55 55	ND
69362	B409-3	86.8	,	ND
69363	B409-4	85.9		ND
69364	B409-5	82.6		ND
69365	B409-6	85.7		ND

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

Report Date: 8/13/92 Job No.: CO22 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1967

METALS

Lab No. 69344

Parameter Antimony Arsenic Beryllium Cadmium Chromium Copper Lead Mercury Nickel Selenium Silver Thallium Zinc	Lab No. 69344 Client ID: B406-6 88.3% Solid Units: mq/kq (Dry Weight) ND 2.4 ND ND 26.7 58.3 209 1.40 25 0.78 ND ND ND 134	Detection Limit Units: mg/kg 6.0 0.5 0.5 0.5 1.0 2.5 5.0 0.1 4.0 0.5 1.0 0.5 2.0	Method Code P F P P P CV P F P P
--	---	---	-----------------------------------

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1967

METALS

Lab No. 69347

	Client ID: B406-9		
	90.7% Solid	Detection Limit	
Parameter	Units: mg/kg (Dry Weight)	Units: mq/kq	Method Code
Antimony	ND	6.0	P
Arsenic	ND	0.5	F
Beryllium	ND .	0.5	P
Cadmium	ND	0.5	P
Chromium	13.4	1.0	P
Copper	22	2.5	P
Lead	ИĎ	5.0	P
Mercury	ND	0.1	CV
Nickel	14	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	0.5	F
Zinc	32.4	2.0	P

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2132A

VOLATILE ORGANICS

Uni	Lab No. 69352 Client ID: B408-19 83.8% Solid ts: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
Parameter		5.0
	ND	5.0
Benzene	ND	5.0
Bromodichloromethane	ИD	10
Bromoform	ND	5.0
Bromomethane	ND	5.0
Carbon tetrachloride	ND	10
Chlorobenzene	ИД	10
Chloroethane	ND	5.0
2-Chloroethylvinyl ether	ND	10
chloroform	ND	5.0
Chloromethane	ND	5.0
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	e ND	5.0
trans-1,2-Dichloroethen	ND	5.0
- Diebloropropalie		5.0
	ne ND	5.0
trans-1,3-Dichiopiopi	ND	5.0
nabari henzene	5.8B	5.0
	ane ND	5.0
1 1 2 2-Tetrachiolocom	ND	5.0
Tetrachloroethene	ND	5.0
Toluene	36B	5.0
1,1,1-Trichloroethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	10
Trichlorofluoromethane		5.0
Vinyl chloride Xylenes (Total)	ND	- m
200 € 900 0 €		

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification:	408-19
Sample No.: <u>69352</u> Job No.	: CO22 Fraction: VCC
Concentration Ur	nits: PPM (PPB)

	COMPOUND NAME	Retention Time	Conc.
1		124.42	
	(a) H18 "	28.36	19
3	. C10 H20 "	29.95	20
	unknown		10
5	11	31.28	16
6	ч	35.01	17
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Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES

Lab No. 69352 Client ID: B408-19 Detection Limit 83.8% Solid Units: ug/kg Units: ug/kg (Dry Weight) Parameter 8300 ND 8300 1,3-Dichlorobenzene ND 8300 1,4-Dichlorobenzene ND 8300 Hexachloroethane ND 8300 Bis(2-chloroethyl) ether ND 8300 1,2-Dichlorobenzene ND Bis(2-chloroisopropyl) ether 8300 ND 8300 N-Nitrosodi-n-propylamine ND 8300 Nitrobenzene ND 8300 Hexachlorobutadiene ND 8300 1,2,4-Trichlorobenzene ND 8300 Isophorone 1100J 8300 Naphthalene ND 8300 Bis(2-chloroethoxy) methane ND 8300 Hexachlorocyclopentadiene ND 8300 2-Chloronaphthalene ND 8300 Acenaphthylene 1600J 8300 Acenaphthene ND 8300 Dimethyl phthalate ND 8300 2,6-Dinitrotoluene 1300J 8300 ND Fluorene 8300 4-Chlorophenyl phenyl ether ND 8300 2,4-Dinitrotoluene ND 8300 Diethylphthalate ND 8300 N-Nitrosodiphenylamine ND Hexachlorobenzene

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

Lab No. 69352 Client ID: B408-19

	83.8% Solid	Detection Limit
Parameter	Units: ug/kg (Dry Weight)	Units: uq/kq
	-	
4-Bromophenyl phenyl ether	ND	8300
Phenanthrene	15000	8300
Anthracene	2200J	8300
Dibutyl phthalate	ND	8300
Fluoranthene	17000	8300
Pyrene	14000	8300
Benzidine	ND	17000
Butyl benzyl phthalate	ND	8300
Bis(2-ethylhexyl) phthalat	e ND	8300
Chrysene	760 0 J	8300
Benzo(a) anthracene	5800J	8300
3,3'-Dichlorobenzidine	ND	17000
Di-n-octyl phthalate	ND	8300
Benzo(b) fluoranthene	4800J	8300
Benzo(k) fluoranthene	4700J	8300
Benzo(a)pyrene	1400J	8300
Indeno(1,2,3-c,d)pyrene	1900Ј	8300
Dibenzo(a,h)anthracene	510J	8300
Benzo(ghi)perylene	1700J	8300
N-Nitrosodimethylamine	ND	8300

TENTATIVELY IDENTIFIED COMPOUNDS

		ion: T408-19	0.1
Client	Sample Identificat	Job No.: <u>CO22</u>	Fraction: BN
Sample	No.: 64550		DDR

Concentration Units: PPM (PPB)

	Concentra	0-201-000	- 1
		Retention	
	COMPOUND NAME	:======================================	
	COMPOUND NAME	27.76	14000
	unknown		14000-1
1	CZOHUZ PAH	25.75	1 4000_
2	CZOHIE PAH	50.20	-1
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24.			
25			KH0V006124

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 2132A

VOLATILE ORGANICS

Lab No. 69353 Client ID: B409-5

	Client ID: B409-5	
Down t	76.0% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: ug/kg
Domasons	255256	
Benzene	ND	5.0
Bromodichloromethane	ND	5.0
Bromoform	ND	5.0
Bromomethane	ND	10
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	10
2-Chloroethylvinyl et	her ND	10
Chloroform	ND	5.0
Chloromethane	ND	10
Dibromochloromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	5.0
trans-1,2-Dichloroeth	ene ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloroproper	ne ND	5.0
trans-1,3-Dichloroprop	oene ND	5.0
Ethyl benzene	ND	5.0
Methylene chloride	ND .	5.0
1,1,2,2-Tetrachloroeth	nane ND	5.0
Tetrachloroethene	ND	5.0
Toluene	ND	5.0
1,1,1-Trichloroethane	2.7JB	5.0
1,1,2-Trichloroethane	ND	5.0
Trichloroethene	ND	5.0
Trichlorofluoromethane	ND	5.0
Vinyl chloride	ND	10
Xylenes (Total)	ND	5.0
	NAT	3.0

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 409-5 Sample No.: 69353 Job No.: Co22 Frac	ction: VOC
Concentration Units: PPM PPB	Retention Estimated
COMPOUND NAME	Time Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND CC	
2	
3 ·	
5	
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7	
8	
9	
10	
11	
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14.	
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16	
17	
	i 1

KH0V006126

TENTATIVELY IDENTIFIED COMPOUNDS

Client Sample Identification: 408-P5	
Sample No.: 69359 Job No.: C022	Fraction: VOC
Concentration Units: PPM	PPB
COMPOUND NAME	Retention Estimated Time Conc.
1. NO VOLATILE ORGANICS COMPOUNDS FOUND	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
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22	
23	
24	
25	I KH0V006127

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

ACID EXTRACTABLES

			*
	Cli	ab No. 69359 ent ID: 408-PS 88.6% Solid ug/kg (Dry Weight)	Detection Limit Units: ug/kg
Parameter	0.,,=		330
		ИD	330
2-Chlorophenol		ND	330
2-Nitrophenol		ND	330
Phonol		ND	330
2,4-Dimethylphenol		ND	330
- A Dichlorophenoi		ИD	330
- Mrich of obliency		ND	1700
4-Chloro-3-methy ipher	101	ND	-
		ND	1700
2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	phenol		1700
2-Methyl 4/0		ИD	1700
Pentachlorophenol		ND	
4-Nitrophenol			

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

gii battii 1000

BASE/NEUTRAL EXTRACTABLES

Lab No. 69359 Client ID: 408-PS

	C11CC 1D. 100 1D	- 1
	88.6% Solid	Detection Limit
<u>Parameter</u>	Units: ug/kg (Dry Weight)	Units: ug/kg
24		
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) et		330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	. 330
Hexachlorobutadiene	ND	330 -
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	27J	330
Bis(2-chloroethoxy) metha	ne ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	60J	330
Acenaphthene	31 J	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	38J	330
4-Chlorophenyl phenyl ethe	er ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1850

BASE/NEUTRAL EXTRACTABLES (con't)

		3	
	Uni	Lab No. 69359 Client ID: 408-PS 88.6% Solid ts: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
Parameter			330
	a -thor	ND	330
4-Bromophenyl ph	enyl ether	720	330
Phenanthrene		140J	330
a-thracene		973 ~	
Dibutyl phthalat	.e	1400	330
Fluoranthene		1800	330
		ND	670
pyrene		ND	330
Benzidine Butyl benzyl phi	halate	110J	330
Butyl benzyl phy Bis(2-ethylhexy)) phthalate		330
Bis (2-ethylnex)	-/	1000	330
Chrysene	ane	830	670
Benzo(a) anthrac	nzidine	ND	330
3,3'-Dichlorobe	-1240	ИD	330
n: n-octvi pntii	aracc	930	330
(h) + []]Ordi	CHETTO	760	330
Renzo(k) fluoran	thene	850	330
n a (a) nyrene		780	330
30/1 7 3-C.	d) pyrene	240J	330
nihenzo(a,h)anu	Illacenc	710	330
noneo(ghillpery)	Gile	ND	330
N-Nitrosodimeth	nylamine	3 -3-	

TENTATIVELY IDENTIFIED COMPOUNDS

Client	Sample Identificat	tion: 408-PS		
Sample	No.: 69359	Job No.: COZZ	Fraction: BNA	_

Concentration Units: PPM

		-	-	
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(r	I		-
	((É	(PI	(PP

		Retention	
	COMPOUND NAME	Time	Conc.

1	Cistis Patter COENTING PAH	127.91	220
2	9.10-ANTHRACENFDIME	1 28.57	220
3	DIMETHYL PHENIANTHILENE ISIMER	129.39	150
4	Party to the description of approximation and the second s	30.87	300
5	CIFHIL PAH	131.57	640
6	,)	1 32.15	410
7	CIHHOCLY	133,02	055
8	uknown	1 33.18	410
9	BENZONET MARMINARY CHILDENIE	1 37.49	300
10	Cietio/Cietiz COELUTICE PAH'	33.61	300
11	C174120	133.82	220
12	CAHLY PAH	135,55	300
13	INKNOWN) ALKANE	136.22	640
14	Czotla PAH	1 37.72	530
15	intronal ALKANT	38,05	1,000
16	CZOHIZ PAH	138.19	980
17	whom	1 39.02	410
18	l ₁	39.38	340
19	LIKAANE ALKANE	1 40.13	830
20	(nkronn)	41.41	530
21	CZZHIZ PAH	141.70	340
22	mknow	1 4395 1	640
23	11	1 46.59	240
24			
25		VUOV	006131 —

Report Date: 8/13/92 Job No.: C022 - Hovnanian N.J. Certified Lab No. 12543 QA Batch 1888

ORGANOCHLORINE PESTICIDES and PCBs

Parameter Aldrin alpha-BHC beta-BHC delta-BHC gamma-BHC (Lindane) Chlordane 4,4'-DDD 4,4'-DDT Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Heptachlor Heptachlor Heptachlor epoxide Toxaphene PCB-1016 PCB-1221 PCB-1232 PCB-1248 PCB-1248	Lab No. 69759 Client ID: 4.3-PS 88.6% Solid Units: ug/kg (Dry Weight) ND ND ND ND ND ND ND ND ND ND ND ND ND	Detection Limit Units: ug/kg 16 16 16 16 16 16 16 32 32 32 32 32 32 32 36 16 320 160 160 160 160 160 160 160 160 160
PCB-1254 PCB-1260	ND	160

Report Date: 8/13/92
Job No.: C022 - Hovnanian
N.J. Certified Lab No. 12543

METALS and GENERAL CHEMISTRY

Lab No. 69359

Parameter	Client ID: 408-PS 88.6% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code
Antimony	ND	6.0	P
Arsenic	5.48	0.5	F
Beryllium	ND	0.5	P
Cadmium	ND	0.5	P
Chromium	20.9	1.0	P
Copper	33.7	2.5	P
Lead	1200	5.0	P
Mercury	1.39	0.1	CV
Nickel	19	4.0	P
Selenium	ND	0.5	F
Silver	ND	1.0	P
Thallium	ND	5.0	F
Zinc	451	2.0	P
0 0			
Cyanide	ND	1.0	· ·
Phenols	ND	5.0	·

Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

8.	ARCH, INC. M ROAD 18817	ENVINOTECH SAMPLE NUMBER	69337	0,1140	14 643	77867	63363	62344	14C59	62346	64347				4. RECEIVED BY:	
	ENVIROTECH RESEARCH, 777 NEW DURHAM ROAD EDISON, N.J. 08817 (1001) 548-3900	AMALYSIS REQUESTED	176	710	PHC	PHC	PHC	MAD/ 270	•	つれる	pile /ppm			DATE/TIME 3. W	DATEITIME 4. P	
	CHAIN-OF-CUSTODY RECORD THS COC 1578 ENVIROTECH JOS NO. COLL	PROJECT MAME		8.5. 6.0		Ĭ		4.0	0.6				>500 ppm, please run BN+	- 1	(CA) VITO 4. RELINQUISHED BY:	
	STATE ZIP ENVING	Brond		2017							>		CONTAINERS:	EU TRIME	1605 IGOS	•
		риоме 218 - 006 б	DAYE TIME SMPLD.	MY E111 26/6/2	141	806	3667	co41 KHOV	911-	144	005	2/4/26/61/6	TOTAL NO.		L. RELINGUISHED BY:	

NAME OF CLIENT 1900 NEPONT AND BULLINGS

SO COLLISTY L'INC. Rd.

ADDNESS

SOMETULIE N. D. OS876

CITY

ATTENTION

PHONE

CHAIN-OF-CUSTODY RECORD

OMS COC 1578
ENVIROTECH JOB NO. CO22
K. HOVNANIAN - NEWARK

PROJECT NAME

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 08817

(906) 649-3889

DATE SMPLD.	TIME SMPLD.	SMPLD.	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	AMALYSIS REQUESTED	ENVINOTECH SAMPLE NUMBER
7/9/92	02:11 26/6/1	TB	Soil		1	Trench 408-16; 4ft.	OHC	84669
	11:25				1	Treuch 408-17, 4ft.		64049
-	13:45				,	Trende 408-18, 4ft.	•	65360
740/92					1	mench 407-9, 5ft.	θ HC	(435)
-					B	Trench 408-19, 5ft.	SAC, VO	25259
-			->		6	Trench 409-8; 3 ft.	PHC, VO	65/5/3
KHOV								
00613								
15				Se .				
		TOTAL N	TOTAL NO. OF CONTAINERS:	ITAIMERS:	8			

if PHC > 500 ram , please ECRA SPECIAL INSTRUCTIONS:

	`	٨	00		N.	
L. Agermomes E. Bar:	7/10-92 8 (),	1. NECEIVED BY:	7/10/02	1. RECEIVED BY: 7/10/02 3. RELIMQUISHED BY:	DATE/TIME	3. RECEIVED DV:
2. RELINGUISHED BY:	DATE/TIME	2. RECEIVED BY:		4. RELIMOUISMED BY:	DATEITIME	4. RECEIVED BY:
	•				*	
	Contraction of the last of the					

ROAD 1817 LEUVINOTECH	NUMBER 10, 2 < 4	69351	d) E37	65358	65364				3. RECEIVED BV:	4. RECEIVED BV:	
ENVIROTECH RESEARCH, 777 NEW DURHAM ROAD EDISON, N.J. 08617 (966) 648-3800	AMALYSIS REQUESTED	10		>	Oh+dd				DATE/TIME 3. RE	DATE/TIME 4. RE	
CHAIN-OF-CUSTODY RECORD JMS COC 1578 ENVIROTECH JOB NO. COLZ K. MONNOWN M. MCC.ON PROJECT NAME	OF SAMPLE LOCATION DESCRIPTION NT.	Hd 0:11-5:01:02-8048	: 22-8048	2 : £2-80h8				7500 pph. please run BN+	RECEIVED BY: //-(12	2. RECEIVED BV:	
	MATRIX PRES. CONT.	7105						TOTAL NO. OF CONTAINERS:	TUMB	DATE TIME 2.	1
ENT Grow merons and ballings Courty Line MS. STATE 219 C 212/64 S 20066	SMPLD.	HA 444	1310	338	A E 5/1			TOTAL NO	STRUCTIONS:	A RELINGUISHED BY:	
ADDRESS STEENT ATTENTION 2, 8		. 6			>	KHO)V006136		SPECIAL	SADA .	

FOR REPORT AND BALLINGS N.7. mi. STATE Fink Msorte Jomes V. To NAME OF CLIEM Jun ATTENTION ADDRESS

PHOME

CHAIN-OF-CUSTODY RECORD

TMS COC 1538

622 K. Hormanian ENVIROTECH JOB NO.

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD EDISON, N.J. 08817

(9081848-3900)

DATE SMPLD.	TIME D. SMPLD.	SMPLD.	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION / DESCRIPTION	AMALYSIS REGUESTED	ENVINOTECH SAMPLE NUMBER
26/06/2	426 26	A.A.	2014	l	I	8409-1: 10.5-11.0	5HC	69360
	424					2-6098		19849
	6001			20-2		# £- bohs		29869
	\$201			v		h-boya		64363
	1105					18409-5		67563
	1123	>	→		>	9-6048	→	69365
							Stale >500 pp. plant	
KHOV							run BN+	
/0061								
37								
		TOTAL N	TOTAL NO. OF CONTAINERS:	(TAIMERS:	و		,	

TOTAL NO. OF CONTAINERS:

SPECIAL INSTRUCTIONS: R'C & A

2. RELINGUISHED BY: DATEITIME 2. RECEIVED BY: 4. RELINGUISHED BY: DATEITIME 4. RECEIVED BY:	Abap Me	LOSSIFIED IN 18 16 16 16 16 16 18 18 18 18 18 18 18 18 18 18 18 18 18	1. RECEIVED BY: 10/92	CEIVED BY: CO 192 B. RELINQUISHED BY:	DATE/TIME	3. RECEIVED BY:	
	. RELINGUISHED BY:	DATEITIME	2. RECEIVED BY:	4. RELIMOUISMED BY:	DATEITIME	4. RECEIVED BY:	ī
					•		

	DATE SAMPLED 7/09/92
CLIENT Soil	DATE RECEIVED 7/10/92
MATRIX_Soil	DATE RECEIVED
SAMPLE No. 69339	JOB No. COZZ
Extraction Extractor's	Analysis Analyst's QA Date/Time Initials Batch No.
Parameter Date/Time Initials	7/15/92 MD 237/
PHC	
-	
	KH0V006138
	KHOADDA

				13	
CLIENT	Sorge		b DATE SAMPL	ED 7/09	192
MATRIX	Soil		DATE RECEIV	VED_ 7/10	192
	69340		JOB No. C	022	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	0L	7/15/92	<u>M0</u>	2371
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		-			
	×				
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40144-5277-711111-0-10-10-10-10-10-10-10-10-10-10-10					
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	V.				

MATRIX S	01341		DATE SAMPLE DATE RECEIV JOB No	ED 7/10	0/92 QA
	Extraction Date/Time 7/13/92	Extractor's Initials	Analysis Date/Time 7/15/92	Initials	237/
<u>+nc</u> -					
					KHUNUUU 140

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

CLIENT	Sorge		DATE RECEIV	ED 7/09/	92
	69342		JOB No. CO	022_	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	<u> </u>	7/15/92	MD	237/
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		DATE SAMPLE	7/09/	192
CLIENT Sorge		DECEIV	FD 7/10	192
MATRIX Soil		JOB No. C	022	
SAMPLE No. 69343		Analysis	Analyst's	QA Batch No.
Analytic Extraction Parameter Date/Time	Extractor's Initials	Date/Time_	Initials Mn	237/_
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CLIENT	Dorge		DATE SAMPI	ED 7/9	1/92
MATRIX	50:1		DATE RECEI	VED	0/92
SAMPLE No	6934	<u> </u>	JOB No	C022	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
Antimony	7/16/92	BT	2/17/92 1317	20	1967
Beryllium					
Cadmium					
Chromium					
Copper					
Nickel					
Silver		-			
Zinc					
Lead		+			
Arsenic		-	7/27/92-1837	- W3	4
Selenium			7/7/2010		
Thallium			7/21/2-1306		
Mercury	4	<u> </u>	7/16/92	BT	4
PHC	7/13/92	0	7/15/92	MD	237/
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MATRIXSAMPLE No	Extraction Date/Time 7/13/92	Extractor's Initials OL	DATE SAMPLE DATE RECEIV JOB No	ED 7/10	0A Batch No. 237/
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MATRIX	Sorge Soil 69346		DATE SAMPL DATE RECEIV JOB No	ED 7/09 VED 7/10	192
Analytic Parameter PHC	Extraction Date/Time 7/13/92	Extractor's Initials OL	Analysis Date/Time 7/15/92	Analyst's Initials MO	QA Batch No. 2371
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CLIENT	0190		DATE SAMPLE	D7/10]	
	- '		DATE RECEIVE	D_7/10	192
MIVINI			JOB No	022	
SAMPLE No.	69347			Analyst's	QA
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis A Date/Time 1 2/17/92 1326	nitials	1967
Antimony	2/10/92		1	-	
Beryllium					
Cadmium					-
Chromium	,				
Copper					
Nickel	н .				
Silver			-		
Zinc		-			
Lead	•		2/12/922203	JB	
Arsenic			7/24/20256		
Selenium	-	-	7/21/2-1719	1	
Thallium			7/1/22	BT	
Mercury			7/15/92	MO	2371
PHC	7/13/92	<u></u>			
-		_			
					KH0V006146

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CLIENT	Sorge		DATE SAMPLED 7/09/92 DATE RECEIVED 7/10/92			
MATRIX	Soil					
SAMPLE No. 69348			JOB No. C	:		
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.	
PHC	7/13/92	DL	7/15/92	MD	2371	
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* *	DATE SAMPLED 7/09/92
CLIENT Socal	DATE SAMPLED 7/09/72
6 .9	DATE RECEIVED 7/10/92
MATRIX	JOB No. COZZ
SAMPLE No. 69349	Analyst's QA
Analytic Extraction Extractor's Parameter Date/Time Initials	Date/Illus
PHC 7/13/92 DL	7/15/92 Mn 237/
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	KHU/VUU6148

MATRIX	Sorge Soil 69350		DATE SAMPL	ED 7/99 VED 7/10	192
Analytic Parameter PHC	Extraction Date/Time 7/13/47	Extractor's Initials	Analysis Date/Time 7/15/92	Analyst's Initials MD	QA Batch No. 237/

MATRIX SAMPLE No Analytic Parameter	Orge Soil 69351 Extraction Date/Time 7/13/92	Extractor's Initials OL	DATE SAMPLE DATE RECEIV JOB No. CO Analysis Date/Time 7/15/92	ED 7/10	92 192 OA Batch No. 237/
PHC_	1113/12				
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CLIENT	Sorge		DATE SAMPLI	ED 7/10	192
MATRIX	Soil		DATE RECEIV	ED_7/10	1/92
SAMPLE No	69352		JOB No. CO	022_	
Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/13/92	_OL_	7/15/92	MO	237/
VOA	***		7/23/92	cc	2132
BN+15	7-1792	<u>22</u>	7/25/92	JP	820
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CLIENT_Sorge MATRIX_SOIL SAMPLE No. 69353 Analytic Extraction Extractor's Initials PHC 7/13/92 DL VOA	7113172	yst's QA
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DATE SAMPLED CLIENT DATE RECEIVED 7/10/92 MATRIX_ C022 69354 JOB No. SAMPLE No. Analyst's QA Analysis Analytic Extraction Extractor's Initials Batch No. Date/Time Date/Time 7/15/92

MATRIX	orge 50:1 69355		DATE SAMPLE DATE RECEIVE JOB No	ED_7/10 022_	192
Analytic Parameter PHC	Extraction Date/Time 7/13/92	Extractor's Initials OL	Analysis Date/Time 7/15/92	Analyst's Initials M	DA Batch No. 237/
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CLIENT	Sorge		DATE RECEIV	ED 7/10	192
	69356		JOB No. C	022_	
Analytic Parameter PHC	Extraction Date/Time 7/14/92	Extractor's Initials	Analysis Date/Time 7/15/92	Analyst's Initials	QA Batch No. 237/
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CLIENT Sorge MATRIX Soil SAMPLE No. 69357	DATE SAMPLED	7/10/92
Analytic Extraction Extractor's Parameter Date/Time Initials PHC 7/14/92 01	Analysis Anal Date/Time Initi	yst's QA
		VU0\\000456

ENVIROTECH RESEARCH, INC. 777 NEW DURHAM ROAD, EDISON, NJ 08817 (908) 549-3900

7/10/92 Socae DATE SAMPLED_ CLIENT 110/92 DATE RECEIVED_ MATRIX C022 SAMPLE No. JOB No. Analytic Analyst's QA Extraction Extractor's Analysis Date/Time Date/Time Initials Batch No. Parameter Initials 7/15/92 DL 2372

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CLIENT	Sorge		DATE SAMPLED 7/10/92
MATRIX	Soil		DATE RECEIVED
#1.51.50Patrick	69359		JOB No
SAMPLE No. Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Analysi's QA Date/Time Initials Batch No. 7/24/92 CC 2/32
VOA	7-17-92	22	7/24/42 PZ 1850
ABN		GR	7-24-92 RRM 1888
PCB Pest.	7-13-92	BT	2111/12 1350 DM 1967
Antimony	7/16/92	131	
Beryllium		-	
Cadmium	. ——		
Chromium			
Copper			
Nickel		_	
Silver			
Zinc	-		7/16/92 BT
Mercury	—		7/XP2455 UB
Arsenic	-		2/0/92 13 50 319
Lead		- +	7/24/940347 UB
Selenium			7/24/92-1645
Thallium			7/20/52 RR 1209
Cyanide		- 0	7/2/92 RR /194
Phenois		2 <u>ll</u>	KHOV006158

CLIENT	Sorge		DATE SAMPL	ED_7/10	192
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Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
PHC	7/14/92	OL.	7/15/92	MO	2372

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	Soil		DATE SAMPLE DATE RECEIV JOB No	ED_7/10/ ED_7/10/ 022_	92
Analytic Parameter PHC	Extraction Date/Time 7/14/92	Extractor's Initials OL	Analysis	Analyst's Initials	QA Baich No. 2372
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CLIENT	Sorge		DATE SAMPLE	7/10/	92
MATRIX	Soil		DATE RECEIV	ED 7/10	192
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Analytic Parameter PHC	Extraction Date/Time 7/14/92	Extractor's Initials	Analysis Date/Time 7/15/92	Analyst's Initials MD	DA Batch No. 2372
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	orge 50:1 69363		JOB No	ED_7/10/9 022_	2
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CLIENT	Sorge	-	DATE SAMPLI	7/10	102
	Soil		DATE RECEIV	ED 7/10	172
SAMPLE No	69364		JOB No. CO	022	مبالو المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة
Analytic Parameter	Extraction Date/Time	Extractor's	Analysis Date/Time		QA Batch No.
PHC.	7/14/92	OL	7/15/92	MD	2372
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MATRIX SO	1		DATE RECEIVE	C022	
SAMPLE No	69365		.02	Analyst's	QA
Augistic	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Initials -	Batch No.
Parameter -	7/14/92	04	7/15/92	<u> MO</u>	2372
PHC					
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APPENDIX C

STANDARD SAMPLING PROCEDURES

TRAILER-MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were made using a trailer-mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner.

Equipment:

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- Trailer mounted solid stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (l gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
 - o Sample cooler/ice packs;
 - Bentonite pellets.

- A trailer-mounted solid stem auger rig will be used to advance the boring to a point above the desired sampling depth;
- The soil materials encountered during the boring will be logged by the geologist as they are brought to the surface;
- The auger will be placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger will be scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger will be rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, then air dried, then given a final rinse with distilled water.
- 4) A clean auger (the second) will be used to collect the soil from the sample zone. The auger will be advanced one foot and brought to the surface.

- 5) The soil will be removed from the auger. Only the interior portion (3 to 4 inches) of the soil will be collected for later analysis. The top and the bottom of the sample will be discarded. A portion of the sample will be set aside for field analysis.
- The soil sample for laboratory analyses will be placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label will be prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-Of-Custody control form will also be prepared.
- 7) The soil.sample bottles will be placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples will be refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis will be decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole will be backfilled with bentonite.

TRUCK MOUNTED AUGER SAMPLING PROCEDURES

Soil borings were advanced using a bruck mounted, solid stem auger rig. Soil samples were collected by standard hand auger techniques in the following manner:

Equipment:

- Truck mounted sold stem auger rig;
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two (2) plastic spray applicators;
- o Wide-mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

- A truck-mounted, solid stem auger rig was used to advance the boring to a point above the desired sampling depth;
- 2) The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger was rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acetone to remove any residual materials then air dried, and given a final rinse with distilled water.

- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.
- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- 6) The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflonlined screw cap. Λ sample label was prepared showing the sample number, depth of collection, date, and analysis conducted. Λ Chain-of-Custody control form was also prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, NJ. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 3 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

HAND AUGER BORING AND SAMPLE COLLECTION

Soil borings were made and samples collected from the all hand auger bore holes in the following manner:

Equipment:

- o Two, 4-inch O.D. stainless steel hand augers (AMS manufacture);
- o Two, 8-inch length, stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon-lined screw caps;
- o Sample cooler/ice packs;
- o Bentonite pellets.

- The surface area was cleared of debris by hand and a shallow hole dug (about 6 inches deep) with a hand trowel;
- The auger was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the auger was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the auger was rinsed with the alconox/water mixture and then rinsed again with distilled water. The auger was rinsed with acewith distilled water. The auger was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water.
- 3). The soil materials encountered during the boring were logged by the geologist as they were brought to the surface;
- 4) A clean auger (the second) was used to collect the soil from the sample zone. The auger was advanced one foot and brought to the surface.

- 5) The soil was removed from the auger. Only the interior portion (3 to 4 inches) of the soil was collected for later analysis. The top and the bottom of the sample was discarded. A portion of the sample was set aside for field analysis.
- The soil sample for laboratory analyses was placed in a wide-mouth amber jar or septum vials with a teflon-lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, an analysis was conducted. A Chain-Of-Custody control form was prepared.
- 7) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).
- 8) The auger used to collect the sample for laboratory analysis was decontaminated using the procedure detailed in Item 2 above.
- 9) At the completion of the boring, the bore hole was backfilled with bentonite.

WASTE CLASSIFICATION SOIL SAMPLING PROCEDURES

The following information details the Waste Classification Soil Sample Collection Procedures. These procedures represent methods utilized to ensure the validity of soil samples collected at the site.

The composite soil samples will be collected in the following manner:

Equipment:

- o Two, 4-inch O.D., stainless steel hand auger;
- o Two, stainless steel hand trowels;
- o 5-quart stainless steel mixing bowl;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
 - o Distilled water/alconox mixture (1 gallon);
 - o Acetone (1 gallon);
 - o Plastic spray bottle applicators;
 - o Wide-mouth, amber glass jars with teflon-lined screw caps;
 - o Sample cooler/ice packs

- One (1) composite soil sample will be collected each 100 cubic yards of excavation spoils. Each composite sample will be made up of four (4) individual soil samples. The soil samples will be collected from different boring depths to attain the most accurate representation of the waste spoils.
- The auger will be advanced to the desired sampling depths, and the auger controls will be placed into a stainless steel mixing bowl. Following the collection of four (4) soil samples, the contents within the bowl will be thoroughly emptied on a bench-kote paper and divided into quarters. Only one quarter will be placed into a sampling jar.

- Upon completion of the sampling for that particular drum, the auger will be scrubbed clean, using alconox and distilled water mixture. After scrubbing, the auger will be rinsed with a alconox/distilled water mixture and then rinsed again with distilled water. The auger will be rinsed with acetone to remove any residual materials, allowed to air dry, then given a final rinse of distilled water. The hand trowel and mixing bowl will also be decontaminated following the same procedures between sample collection.
- The soil sample for laboratory analyses will be placed into a wide-mouth amber jar with a teflon-lined screw cap. A sample label will be prepared showing the sample number, date, and analysis to be conducted. A Chain-of-Custody Control form will also be prepared.
- The soil sample bottles will be placed into a storage cooler at 4°C (ice packs) for transport to the J M Sorge, Inc. offices located in Somerville, NJ. The samples will be refrigerated until transferred to the laboratory for analysis.

SURFACE SAMPLE COLLECTION PROCEDURE

Soil samples were collected from all sample locations in the following manner:

Equipment:

- o Two, 8-inch length stainless steel hand trowels;
- o Disposable fiber brush;
- o Distilled water (2 gallons);
- o Distilled water/alconox mixture (2 gallons);
- o Acetone (1 gallon);
- o Two, plastic spray applicators;
- o Wide mouth, amber glass jars and septum vials with teflon lined screw caps;
- o Sample cooler/ice packs;

- The surface area was cleared of debris by hand and a shallow hole dug with a hand trowel;
- The hand trowel was placed in the hole and advanced to the desired sample depth and removed. Upon removal, the trowel was scrubbed clean using an alconox and distilled water mixture. After scrubbing, the trowel was rinsed with the alconox/water mixture and then rinsed again with distilled water. The trowel was rinsed with acetone to remove any residual materials, air dried, then given a final rinse with distilled water;
- 3) The soil materials encountered during the sampling were logged by the geologist.

- 4) The soil samples for laboratory analyses were placed in a wide-mouth amber jar or a septum vial with a teflon lined screw cap. A sample label was prepared showing the sample number, depth of collection, date, and analysis to be conducted. A Chain-of-Custody control form was prepared.
- 5) The soil sample bottles were placed in a storage cooler at 4°C (wet ice) for transfer to the J M Sorge, Inc. offices in Somerville, New Jersey. (The samples were refrigerated until transfer to the laboratory for analysis).

Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in U.S. EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with U.S. EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by U.S. EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in U.S. EPA Method 608. Solid samples are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Petroleum Hydrocarbons:

Water samples are analyzed for total petroleum hydrocarbons by I.R. using U.S. EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with SW-846 Method 3540, as modified by the Draft "N.J. DEP ECRA Sampling Plan Guide", Attachment 2 page 9, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

- P Inductively Coupled Plasma Emission Spectroscopy (ICP)
- A Flame Atomic Absorption
- F Furnace Atomic Absorption
- CV Manual Cold Vapor (Mercury)

Water analyses are performed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition).

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

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Element	Water Flame	Test Method Furnace	Solid Flame	Test Method Furnace
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium, Chromium, Cobalt Copper Iron Lead Magnesium Manganese Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc	202.1 204.1 208.1 210.1 213.1 215.1 218.4 219.1 220.1 236.1 239.1 242.1 243.1 249.1 258.1 272.1 273.1 279.1 286.1 289.1	202.2 204.2 206.2 210.2 213.2 218.2 218.5 219.2 220.2 236.2 239.2 243.2 249.2 270.2 272.2 279.2 286.2 289.2	7020 7040 7080 7090 7130 7140 7190 7197 7200 7210 7380 7420 7450 7460 7520 7610 7760 7770 7840 7910	7041 7060 7091 7131 7191 7195 7201 7421 7740 7841 7911

Cyanide:

Water samples are analyzed for cyanide using U.S. EPA Method 335.2. Cyanide is determined in solid samples as specified in the U.S. EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using U.S. EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the U.S. EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040 Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

EP Toxicity - Method 1310

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 16th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.